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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

AN EVALUATION OF THE INDUSTRIAL ARTS PROGRAM

IN THE PRIMARY SCHOOLS OF GRENADA

The undersigned certify by they have read, and recommend

(C)

FRANK ALBERT AIRD

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

DEPARTMENT OF INDUSTRIAL AND VOCATIONAL EDUCATION

EDMONTON, ALBERTA

SPRING, 1972





1972  
1

THE UNIVERSITY OF ALBERTA  
FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "An Evaluation Of The Industrial Arts Program In The Primary Schools of Grenada" submitted by Frank Albert Aird in partial fulfilment of the requirements for the degree of Master of Education.



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## ABSTRACT

The purpose of the study was two-fold: (a) to evaluate the industrial arts program of studies in the primary schools of the State of Grenada, and (b) to suggest recommendations for the improvement of that program. This particular research was attempted because no evaluation study had ever been done to determine the merits or problems of the program.

To collect the relevant data for this study a modified version of Section D-11, Industrial Arts, of the Evaluative Criteria, 1960 Edition, published by the National Study of Secondary School Evaluation was used. Permission was granted to use the research instrument which in its modified form, consisted of six principal aspects: organization, nature of offerings, physical facilities, direction of learning, outcomes, and special characteristics of industrial arts.

In the course of the study the researcher travelled to the State of Grenada where he sought and obtained permission to conduct the research in the primary schools, and also the co-operation of the Education Department. The researcher found that there were twelve institutions in which industrial arts facilities were functioning.

The scope of the study was state-wide involving the teachers in all these twelve industrial arts facilities which were functioning on the primary level in Grenada at the time of the study. The participants co-operated to the extent that all the questionnaires were completed and returned.

The findings of the study led to the general conclusion that the industrial arts program in the State of Grenada was considered





satisfactory by the participants in the aspects of organization, nature of offerings, and direction of learning (instructional staff, instructional activities, and methods of evaluation). The program was considered unsatisfactory by the participants in the aspects of physical facilities and direction of learning (instructional materials). For those aspects dealing with outcomes and special characteristics of the industrial arts program in Grenada the findings of the study were inconclusive.





## ACKNOWLEDGEMENTS

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The Canadian International Development Agency provided the assistance which made it possible for the writer to pursue studies at The University of Alberta.

Permission to use the research instrument was granted by Dr. D. Manlove, Executive Secretary of the National Study of Secondary School Evaluation.

The Education Department, Grenada, gave permission to conduct the evaluation in the schools, and the industrial arts teachers supplied the data for the study.

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## CHAPTER I

### INTRODUCTION

#### Orientation to the Problem

The State of Grenada is comprised of the islands of Grenada, Carriacou, and Petit Martinique. It is the most southerly of the Windward Islands which are situated in the Eastern Caribbean. The map represented as Figure 1 shows the geographical position of the State whose area is 133 square miles. The population of the state in 1968 was estimated at 104,188 people. Population figures for the last decennial census taken in 1970 were not available at the time of the study (4,435).

Educational statistics from the Education Department for 1970 indicate that there were 33,360 pupils enrolled in the state's 58 primary schools and 11 secondary schools. Approximately ninety-one per cent of these pupils were enrolled in primary schools, and the remaining nine per cent were enrolled in secondary schools during the school year ending August, 1970 (1, 2).

In addition to the basic subjects of language arts, mathematics, social studies, science, and others, a program including woodwork and drawing and entitled "handicrafts", is included in the primary school curriculum of the state. Because the term "handicrafts" does not describe adequately the learning activities, the physical facilities where learning takes place, or the training of teachers responsible for instruction, the term "industrial arts" was selected for this study.





Figure 1

GEOGRAPHICAL POSITION OF THE STATE OF GRENADA  
(Grenada Tourist Board)



## STATEMENT OF THE PROBLEM

Since a formal evaluation of the industrial arts program at the primary level of studies in the State of Grenada has never been conducted, educators do not have adequate information to document the merits or problems of the program which they offer to primary school pupils, or to improve the existing program to reflect developments of modern industry.

## OBJECTIVES OF THE STUDY

The specific objectives of the study were to evaluate the following areas of the industrial arts program in the primary schools in Grenada:

1. The organization;
2. The nature of offerings;
3. The physical facilities;
4. The direction of learning, including:
  - a. Instructional staff,
  - b. Instructional activities,
  - c. Instructional materials,
  - d. Methods of evaluation;
5. The outcomes of learning;
6. The special characteristics of industrial arts in these primary schools.

The study had the following minor objectives:

1. To review the scope of activities offered pupils in the





industrial arts facilities in Grenada.

2. To determine how adequately the industrial arts facilities were equipped to meet the basic needs of the program.
3. To suggest recommendations for improving the program, based on the results of the study.

#### SCOPE AND LIMITATIONS OF THE STUDY

The scope of the investigation was state-wide, involving the teachers in all industrial arts facilities functioning in the primary schools in Grenada at the time of the research.

The study had the following limitations:

1. It was not possible to establish self-evaluation committees, as suggested in the guidelines for administering the Evaluative Criteria. Because no self-evaluation committees were formed, the findings of the study were based on the judgments of the individual participants as recorded in the completed research instrument.
2. The study was limited by the available resources and the quality of data made available to the investigator.

#### ASSUMPTIONS

The study was based on the following assumptions:

1. That the industrial arts teachers were competent educators in their field.
2. That it was possible to obtain an assessment of the industrial arts program through a self-evaluation made



by the industrial arts teachers.

3. That the participants understood the questions within the research instrument and provided valid responses with reference to the industrial arts program.

#### SIGNIFICANCE OF THE STUDY

In the process of education, periodic and rigorous evaluations are needed to yield factual data about various programs in operation in the school situation. This study attempts to provide such data about the industrial arts program in the State.

The data obtained indicate areas of strength and weakness, that could be useful feedback to be utilized by the teachers concerned, in their on-going programs.

It is hoped that the study would be an impetus to all industrial arts teachers in the state. so that they may attempt their own evaluation of their program with a view to making their teaching more effective and their program more meaningful in terms of prevailing situations and students' needs. The findings of the study may help to serve as guidelines for further planning, decision-making, and development and expansion of the industrial arts program in the State of Grenada.

#### DEFINITION OF TERMS

A review of the literature and documents available to the researcher, from the Grenada Education Department failed to provide adequate or applicable definitions for the terms primary school and





secondary school, industrial arts facilities, handicraft departments and centres, and the term "industrial arts".

For this reason the following operational definitions were prepared for this particular study:

#### Primary School

The primary school is defined

as the educational institution which is non-selective and tuition-free, organized for, and charged with the responsibility of, the education of children from the ages of 5 to 16 years. It includes these three main divisions: (a) the Infant Grade, 5 - 7 years, (b) the Junior Grade, 7 - 12 years, and (c) the Senior Grade, 12 - 16 years.

#### Secondary School

The secondary school is defined

as the educational institution which is organized for and charged with the responsibility of the education of children selected generally at the ages of 11 to 13 years for a study of wider scope and more advanced degree than the primary school. It is non-compulsory, requires fee-paying and equips its students for careers such as civil service and business, or professional and further education, including university entrance.

#### Industrial Arts

The following definition of industrial arts, given by Schmitt and Chismore, is in agreement with the general objectives of education in Grenada (Chapter II, page 15) and will be used throughout this study:

Industrial Arts . . . is the body of subject matter or body of courses, organized for the development of understandings about the technical, consumer, occupational, recreational, organizational, social, historical, and cultural aspects of industry and technology (3, 103 - 104).

#### Industrial Arts Facilities

An industrial arts facility is defined

as any room or building equipped for the purpose of industrial arts instruction.



Industrial arts facilities, at the primary level, in Grenada are of two types: the Handicraft Departments and the Handicraft Centres.

#### Handicraft Department

A handicraft department is defined

as an industrial arts facility which is part of a specific primary school and serves students in attendance at that school.

#### Handicraft Centre

A handicraft centre is defined

as an industrial arts facility serving a number of primary schools which do not have their own handicraft departments.

#### School Evaluation

Of the many available definitions for the term school evaluation, the definition provided by the National Study of Secondary School Evaluation was considered appropriate for this study.

School evaluation may be considered as ratios of accomplishments where the quality and nature of work done in a school are related to what should be done in order to satisfy the philosophy and objectives of the school and the needs of the youth who are or should be served by the school (2, 4).

### METHODOLOGY

The decision to evaluate the industrial arts program in the primary schools of Grenada was made in April, 1971.

#### Population

The population of the study was comprised of the twelve teachers who were responsible for instruction in the twelve industrial arts facilities functioning at the primary level in Grenada at the time of the study.



### Research Instrument

The instrument selected for the collection of pertinent data for the study, was Section D-11 of the Evaluative Criteria, 1960 Edition (2, 153).

Reasons for the selection of Section D-11 as the research instrument for this study, as well as a description of the instrument, and the manner in which it was modified are given in Chapter III.

### Data Collection

In May, 1971 the researcher travelled to the State of Grenada to administer the instrument. After receiving permission to conduct the study from the appropriate authorities, the researcher visited the industrial arts teachers responsible for the industrial arts program in each of the twelve participating primary schools. During these visits the researcher explained the purpose of the research, solicited the co-operation of the teachers and delivered a copy of the research instrument to each participant. Within five weeks, eleven of the questionnaires were returned. The twelfth questionnaire was received by the researcher after his return to the University of Alberta in June, 1971.

Permission to use Section D-11 of the Evaluative Criteria, 1960 Edition was received from the executive secretary of the National Study of School Evaluation, Dr. D. C. Manlove (Appendix A).

### Data Abstraction and Analysis

Abstraction of the data collected by means of the instrument commenced in January, 1972. The ratings assigned to the items in the various sections of the research instrument by each participant were





recorded and the frequency distribution of the assigned ratings presented in tabular form. These frequency distributions were then used to establish "ratios of accomplishments" (2, 4) in order to evaluate the industrial arts program in the State of Grenada.



## CHAPTER REFERENCES

<sup>1</sup>Ministry of Education and Social Affairs, "Educational Statistics." a mimeographed paper, Grenada: 1970.

<sup>2</sup>National Study of Secondary School Evaluation, Evaluative Criteria, 1960 Edition. Washington: National Study of Secondary School Evaluation, 1960.

<sup>3</sup>Schmitt, M. L. and Chismore, W. D., "Definitions for Industrial Arts," Industrial Arts and Vocational Education, Vol. 56, Mar. 1967.

<sup>4</sup>Thomas Skinner Directories, The West Indian and Caribbean Yearbook, 1971. Croyden, England: Thomas Skinner Directories, 1971.



## CHAPTER II

### BACKGROUND OF THE STUDY

In the previous chapter an orientation to the study and a brief description of the methodology employed is presented. Chapter II provides the background of the study through library research.

#### REVIEW OF LITERATURE ON EVALUATIVE STUDIES IN INDUSTRIAL ARTS

To establish the theoretical framework for this study, the standard library indexes for research were reviewed to determine if other research studies, dealing with an evaluation of industrial arts, had been completed. Several studies, suggesting areas of major concern, were found and are summarized as follows:

A study completed in 1964 by Dr. Ralph Steeb and others sought to evaluate the industrial arts program in Escambia County, Florida. The purpose of this study (the first of its type to be done for industrial arts education in Florida) was to evaluate industrial arts facilities and training and to make recommendations for future expansion and improvement of the industrial arts programs (15, iii). Among their findings Dr. Steeb and his associates reported:

The committee equated and summarized the overall needs, problems, and direction for improvement of industrial arts to be approximately 75% Instruction (organization, method, and techniques used by teachers), 20% Equipment and Supplies, and 5% Repairs and Maintenance of Equipment.

The supervision of industrial practices is infrequent and is generally carried out by persons with limited backgrounds in this subject area (15, 25 - 27).





Dr. Steeb's committee also found that many needs and problems existed in the area of instruction: (a) program organization, (b) content, (c) instructional material, (d) teaching methods and techniques.

According to Dissertation Abstracts (5, 787) Alsip completed in 1965, "An Evaluation of the Industrial Arts Programs in the Public Schools of Louisiana." (The original document could not be obtained for this review.) To collect the necessary data for the study, Alsip formulated a survey instrument which was sent to 171 selected industrial arts teachers in Louisiana. He found that, in general, both junior and senior high schools, small as well as large, were meeting the criteria of the evaluative instrument in three areas evaluated, namely:

1. nature of offerings, 2. objectives, and 3. standards of staff and instruction. There was, however, one or more deficiencies in each of these areas. In each of the three additional areas of the programs evaluated, namely, 4. organization, 5. areas of industrial arts, and 6. physical facilities, the researcher found several weaknesses.

Alsip also found a difference in deficiency of physical facilities between large and small schools.

A study completed by Wright in 1970 sought to evaluate the "Graphics" portion of the Alberta Junior High School Industrial Arts Program (21, 2). The specific questions which Wright's study sought to answer were:

1. Do the students achieve the desired outcomes as listed by the teacher and the standards committee?
2. If the students do not achieve the outcomes (question 1), is it possible to identify the inconsistency of objectives, activities, and outcomes which lead to the lack of achievement?



3. To what extent did the students learn the various concepts which were set down in the curriculum guide for Industrial Arts programs in the Province of Alberta, as content for the field of "Graphics"?
4. Did the teacher initiate the student experiences and activities outlined in the curriculum guide? (21, 3).

In the area of "Graphics" Wright found that student achievement was low, and the desired outcomes were not at a level acceptable to either a standards committee or the industrial arts teacher. The data of Wright's study also revealed several weaknesses in the planned curriculum:

1. The intent of the curriculum planners was subject to misinterpretation by the teachers.
2. The concepts listed in the curriculum guide were insufficiently clear for the teacher to guide his students to full understanding.
3. The curriculum guide failed to specify necessary teaching procedures which the judges felt necessary to accomplish the desired student achievement.
4. The concepts presented in the curriculum guide were unrealistically difficult.
5. Present methods of measuring students' understanding of concepts listed in the curriculum guide may be of questionable validity. (21, 39 - 40).

Of particular significance was "An Evaluation of the Industrial Arts Program in the Thirteen Comprehensive Schools of Thailand" completed by Kamol Vilaiprom. To collect data for the study, Vilaiprom used a modified version of the Evaluative Criteria, 1960 Edition (12,



153) published by the National Study of Secondary School Evaluation.

Vilaiprom's conclusions are summarized here as follows:

1. That the members of the evaluating committees were generally satisfied with the organization of the industrial arts programs.
2. That the stated objectives of the industrial arts program were being met in the nature of offerings, with eleven of the seventeen items presented, rated above average or excellent.
3. Deficiencies in physical facilities were found in three broad areas: (1) the physical layout of the shop, (2) the utilities provided in the shop, and (3) the equipment provided in the shop.
4. In the direction of learning, the industrial arts program was not meeting its stated objectives as measured by the evaluative instrument:
  - a. although seven of twelve item statements listed for evaluating instructional staff were rated above average or excellent, several deficiencies were found in this area.
  - b. Instructional activities were found to be deficient in the two broad general areas of class activities and supporting instructional hardware.
  - c. Industrial arts teachers in most of the comprehensive schools were found to be seriously in need of all types of instructional materials.





- d. Seven of the thirteen evaluating committees questioned the validity and reliability of the present methods of student evaluation. These committees felt that instruments were needed to enable industrial arts teachers to evaluate leadership development, responsibility, problem-solving ability, and attitudes towards safety.
5. In the area of outcomes it was found that students were not acquiring the ability to select, care for and use industrial products intelligently or to appreciate good design and construction. Evaluators felt it to be a serious shortcoming of their programs that students did not develop an understanding of the properties and uses of raw materials used in their shops (20, 128 - 136).

#### RELATED TERMS

##### Philosophy

The educational program and objectives of a school should be a reflection of its educational philosophy. The educational philosophy serves to establish the framework and structure of the educational program and helps to establish the guidelines for setting the goals and objectives of that program.

Dewey views philosophy of education as:

. . . not an eternal application of ready made ideas to a system of practice having a radically different origin and purpose. It is only an explicit formulation of the problem of the formation of right mental and moral habitudes in respect to the difficulties of social life (4, 331).



It follows from this definition that a statement of philosophy should serve as a guidepost for the development of the entire instructional program.

A key to the philosophy of education of the State of Grenada may be found in the following statement of purpose made by the Governor of the State of Grenada in a Throne Speech in 1969:

My Government has made education its number one priority because it is aware that the pace of the total development of the State is dependent on the pace of the development of its human resources. With the co-operation of the teachers, . . . the products of my Government's Education Policy will be men and women who have a realistic self-concept and faith in the future of their country; citizens who will develop the ability to think . . . clearly and objectively . . . (2, 16).

A philosophy of education affects every policy and activity of the schools. It follows, therefore, that the basic philosophy of education mentioned above suggests the objectives of education in Grenada.

### Aims and Objectives

The terms "aims" and "objectives" are often used interchangeably in education. Taba speaks of them as follows:

The chief activity of education is to change individuals in some way: to add to the knowledge they possess, to enable them to perform, to develop certain understandings, insights, and appreciations. The statements of these expected or desired outcomes are usually called either educational aims or educational objectives (17, 194).

Such desired outcomes, according to Taba, may be stated on several different levels. On the broadest level, aims or objectives such as "the development of a democratic way of life, of civic responsibility, creativity, economic self-sufficiency, or self-actualization" (17, 196)



may be desired as the philosophy of education. On a more specific level, the desired outcomes such as the acquisition of certain knowledge, skills, techniques, and attitudes are usually referred to as educational objectives. The latter is the sense in which the term "objectives" is used for purposes of this study.

The general objectives of education in Grenada were stated in a document prepared by the Ministry of Education and Social Affairs. This document stated

- . . . the activities in our schools must be planned to help our children develop the following characteristics, abilities and qualities:
1. Competence for a suitable occupation.
  2. A realistic attitude to self and belief in their worth.
  3. A capacity to apprehend and practice basic virtues.
  4. A responsible attitude to work.
  5. Confidence in the ability of Grenadians to manage their own affairs and faith in the future of Grenada.
  6. A favourable attitude to matters of health.
  7. The ability to think objectively and to seek for the truth.
  8. An appreciation of the West Indian culture.
  9. An interest in the life of their communities and a willingness to devote some of their time and energy for the betterment of the society in which they live.
  10. A belief in the dignity and brotherhood of man and in the democratic way of living.
  11. An understanding of Grenada's role in regional and world affairs.
  12. The concept that education is a continuing process beyond the school (11, 1).

The definition of industrial arts adopted for this study (Chapter I, page 7) is consistent with these general objectives of education in Grenada. In this connection it may be noted that:

1. The objectives of education call for competence for a suitable occupation -- the definition of industrial arts calls for the development of an understanding of the technical and occupational aspects of industry.





2. The objectives of education call for confidence in the ability of Grenadians to manage their own affairs -- the definition of industrial arts calls for the development of an understanding of the organizational aspects of industry and technology.
3. The objectives of education call for an appreciation of the West Indian culture which includes technological development. The definition of industrial arts calls for development of an understanding of the cultural, recreational, and consumer aspects of industry and technology.
4. The objectives of education call for an understanding of Grenada's role in regional and world affairs -- the definition of industrial arts calls for the development of an understanding of the social and historical aspects of industry and technology, which is needed to understand world commerce, trade, and political realities.

### School Evaluation

The extent to which an educational program may be termed successful is the extent to which it meets its stated philosophy and objectives.

Hastings (10, 27), speaking of curriculum innovation, identifies two general purposes for evaluation: one purpose is that the information collected could be used as feedback for revision of materials and methods, and the other purpose is to provide information



as input for decision-making by the schools. Without such feedback, decisions to revise and particularly decisions concerning how to revise, must be based on feelings and personal preferences; and decisions to adopt or reject certain programs are subject to such pressures as the dimensions of glamour, public visibility, and political expediency (10, 27 - 28).

### Evaluation Defined

The term "evaluation", despite its widespread popularity, may often be poorly defined and improperly used. It is not uncommon for the meaning of evaluation to be taken for granted, with resulting confusion when two or more individuals using the term fail to understand one another. A discussion of some of the key concepts of evaluation put forth by various writers may serve to indicate the context for the definition of evaluation adopted for this study.

Grobman (7, 2) views curriculum evaluation in its broadest context, reflecting all systematic efforts of a project to assess the strengths and weaknesses of its activities, and their usefulness. Stratemeyer, et. al., would add that:

The first basic concept in evaluation is clarifying the goals and values to be reached. The key concept in evaluation is value (16, 479).

Scriven (14, 40) saw evaluation as an attempt to answer questions about certain processes, personnel, programs, and procedures.

Bloom, et. al., in a Taxonomy of Educational Objectives provided a definition of evaluation when they wrote

Evaluation is defined as the making of judgments, about the value for some purpose, of ideas, works, solutions, methods, material,



etc. It involves the use of criteria as well as standards for appraising the extent to which particulars are accurate, effective, economical, or satisfying. The judgments may be either quantitative or qualitative . . . (1, 185).

Taba speaking of evaluation of curricular outcomes supported Bloom, et. al., when she wrote

The term evaluation is . . . used to describe a process which includes a careful gathering of evidence on the attainment of objectives, a forming of judgments on the basis of that evidence, and a weighing of that evidence in the light of the objectives (17, 310).

Hagen and Thorndike, in The Encyclopedia of Educational Research, see evaluation as comprising two main steps:

Evaluation in education signifies describing something, in terms of selected attributes, and judging the degree of acceptability or suitability of that which has been described (9, 482).

Of these two main steps, the first is description, by some form of measurement, rating, or ranking, and the second step is making a judgment on the existing state of affairs.

From the review of literature on evaluation it appears evident that no universally accepted definition of evaluation can be found. There is, however, sufficient agreement among the authors discussed above to suggest the appropriateness of the definition of evaluation adopted for this study, which is repeated here for the convenience of the reader:

. . . School Evaluation may be considered as ratios of accomplishment where the quality and nature of work done in a school are related to what should be done in order to satisfy the philosophy and objectives of the school and the needs of the youth who are or should be served by the school (12, 4).



### Self-evaluation of School Programs

The most complete evaluation takes into account the data from all sources such as pupils, parents, employers, teachers, and so forth. But as Taba (17, 341) points out, for the "first round of interpretation" the teacher is often the most appropriate source of data since it is the teacher who is in charge of the program being evaluated. Self-evaluation represents such a "first round of interpretation" for the purpose of collecting data. It seems reasonable also that evaluation performed by teachers without the aid of visiting committees to provide a check on such self-evaluations could still be considered useful and sound practice. The National Study of Secondary School Evaluation gives support to this form of self-evaluation in stating: " . . . the school staff may use the self-evaluation as a basis for improving the program either with or without the use of a visiting committee (12, 57).

### A BRIEF DESCRIPTION OF THE HISTORY AND ORGANIZATION OF EDUCATION IN GRENADA

Like many of her sister ex-British West Indian Colonial Territories, the system of universal education in Grenada had its birth in the emancipation of slavery. Gordon, writing about the pre-emancipated slave workers, said

One of the circumstances of slavery is that the slave workers are kept ignorant. If they are not instructed in any art or skills other than those required for their unpaid labour, they are less likely to contemplate alternatives and so resist their masters (6, 9).





A few slaves, however, received instruction in Christianity because their owners were willing to have slaves with some education, and so permitted religious bodies to instruct the slaves (6, 11).

### Early British Involvement

As early as 1823 the British Government urged the provision of religious instruction for slaves. With the passage of the Act of Emancipation the British Government became actively involved in providing "schooling for the mass of the people" (6, 19) in the West Indies. Of the first allocation of the Negro Education Grant in 1835, Grenada was given £800 for negro education. This grant was made by the British Government on the basis of the number of ex-slaves in the territory. These funds were to be administered by religious bodies who "accepted the invitation to extend their schools and advanced ambitious education programmes" (6, 23). Palmer in an unpublished report on the development of education in Grenada wrote the following:

. . . during the period 1835 - 1845 the religious bodies were very active spreading religious education and elementary schooling (13, 1).

It became apparent, however, that the religious and imperial partnership would not be as successful as originally envisaged, so "the Imperial Grant came to an end in 1845 with the solemn injunction to the West Indian legislatures and West Indian workers to support the education of their own children" (6, 34).

An indication of the extent of the educational system of Grenada during this period was given in the Mico Charity Abstract of Daily, Sunday and Adult School Returns, dated July 1840, which showed



that in Grenada there were 12 schools, 5 teachers, 1,388 scholars and a total average attendance of 1,104 (6, 36).

#### Organizational Changes 1845 - 1925

After the Negro Education Grant was withdrawn by the British Government in 1845, "no responsible person queried whether schools should be maintained" (6, 43). The problem which then faced the legislature was the decision on the nature of elementary education that should be provided or supported (6, 43). The withdrawal of the grants, however, did not signal the end of religious involvement with education. The Roman Catholic, Anglican, Methodist, and Presbyterian churches played a highly significant role in the provision of facilities and staff for the education of the people of the state. Even today, although the denominational schools are largely supported by state grants, the churches continue to influence the nature and quality of education in Grenada, where more than 2/3 of all schools are classified as denominational.

The need for an educated middle class was felt by both the legislature and the religious bodies. According to Palmer (13, 1) an Education Board for the establishment of a Grammar School for Secondary Education was established in 1857. This Grammar School was located in St. George's.

Schools were divided into classes for the first time in 1882 and a compulsory education ordinance was passed in 1888 (13, 1). Education in Grenada had grown from 12 schools with a total enrolment of 1,388 pupils in 1841 to 32 schools with a total enrolment



of 6,247 pupils in 1894. In 1894, 7.9 per cent of the total revenue of Grenada was spent on primary education (6, 119).

In 1906 the laws regarding public primary education were consolidated. At that time no recognition was given to Infant Schools, but in 1907

1. infant schools were included on the list of aided schools,
  2. schools were classified for the first time as combined, lower division and infants,
  3. provision was made for an industrial school, and
  4. provision was made for pensionable allowances for all head teachers with the exception of those in infant schools
- (13, 2).

School attendance was made mandatory for all children between the ages of 6 and 14 years in 1920. The children were to receive instruction in reading, writing and arithmetic.

In 1924 "the Governor Statutory Duties Relief Ordinance relieved the Governor of the Presidency of the Board of Education. The Director of Education then became President" (13, 2) of the Board of Education.

### Practical Education

Practical education in Grenada, as a forerunner of industrial arts, had its beginning before World War I. After a period of slow growth, it has now become an important part of the educational program of Grenada.

Gordon states that:





. . . in the nineteen twenties and thirties the colonial authorities made consistent attempts to improve the existing lamentably poor educational provision and to shift the emphasis from wholly bookish studies to scientific, technical and practical studies (6, 5).

Because of the lack of funds and support given to the colonial authorities by the newly elected members of the legislature, only random changes resulted from these efforts. There were, however, strong forces for the development of practical education. Gordon reports that many West Indians who had travelled abroad, including some of those who fought in World War I, returned with "a knowledge of standards of practices abroad" (6, 110). These West Indians joined in the demands for a better education. The directors of education in the territories " . . . managed to extract the funds from ever-decreasing colonial budgets for government training colleges, handicraft centres and teachers' courses" (6, 110).

One of the first centres of practical education was established in the town of St. George, under an instructor who taught woodwork to boys recruited from primary schools in the town. Handicraft centres were also established in other parts of the state and handicraft departments were provided in several of the newer schools. The availability of trained teachers led to the expansion of the handicraft program to include technical drawing.

After World War II the need for technical and vocational education became ever more evident. This need was borne out of three "Reports of Inquiries (13, 4) made into the administration and policy of education in Grenada from 1943 to 1961.

The first report of enquiries was the Hammond Report of 1943.



According to Palmer, Hammond recommended that senior children (over 12 years) should pursue a course with a practical bias. Palmer indicates that "Hammond seems to have had no doubt that the chief aim of education should be to promote economic viability of the state", and that " . . . the education of the majority of adolescent boys and girls should consist essentially of 'practical training' generally called 'pre-vocational training'" (13, 5).

The second report of enquiries was based on an educational survey conducted in 1953-54 by C. V. D. Hadley, then Chief Education Officer of the Island of St. Vincent (one of the Windward Islands). The terms of reference of Hadley's survey were:

- i. To enquire into the report on the present and future cost of education in the Windward Islands;
- ii. To make recommendations for future policy with respect to the provision of schools and teachers having regard to:
  - (a) the expectation of a progressive increase in the enrolment of pupils, and,
  - (b) the prospective financial resources of each island.
- iii. To examine the defects in the present educational system and to suggest improvements of a long and short term nature (8, 6).

Hadley called for the re-organization of the school curriculum to provide practical subjects which would give the instruction a pre-vocational bias. Hadley also stressed the need for specialist teachers for instruction in practical subjects. He stated that schemes existed for technical and vocational education but in most cases because of the high cost of facilities for such instruction they "never got beyond the paper stage" (8, 13).

The third report of enquiries was the Murray Report of 1961. "Reginald Murray, then Federal Education Advisor, visited Grenada to



enquire into the system of Education in Grenada, including the adequacy of existing Legislation and make recommendations" (13, 10).

Among Murray's recommendations was the following:

That before any thought is given to sheer increase of secondary places attempts should be made to diversify the training given and that where practicable courses in commercial subjects, domestic science, art, wood and metalwork be added (13, 10 - 13).

It was not possible to obtain further information on the extent to which these three reports were implemented, although Palmer (13, 34) does suggest that the Hammond Report was implemented. However, the additional construction of handicraft centres and handicraft departments (from 9 in 1965 to 12 in 1970) would indicate that government policy was consistent with these reports.

#### Technical Education

UNESCO, in 1961 reported that "Growing attention is also being paid to the provision of courses in practical subjects . . ." (19, 1327). Industrial Arts (called by that name at the secondary level) was first taught at the Grenada Boys Secondary School, Technical Wing, in 1962. The technical wing of this building was provided by the joint effort of the United States Government, the Government of Grenada, and the former Federal Government of the West Indies. Courses were offered in woodwork, metalwork, and mechanical drawing. Adult evening classes were also organized. In 1967 the Technical Wing of the Grenada Boys Secondary School was given autonomous operation under the name of the Grenada Technical Centre. The Grenada Technical Centre continued to offer industrial arts instruction and expanded its program of adult vocational education. The Technical Centre also had administrative





responsibility for the industrial arts program in the primary schools (13, 58).

A recent development is the planned establishment of junior secondary schools whose curriculum will include an offering of pre-vocational education to large numbers of students between the ages of 12 and 16 whose educational opportunities were previously limited to the facilities of the primary schools and the handicraft centres.

Additional technical and vocational education is provided by the Domestic and Commercial Arts Institute located in St. George's . and a new technical college to be opened in St. George's in September, 1972.

The new Technical College is receiving expert attention as the groundwork is being done for the beginning of operations in September, 1972. For structuring of programs, Camp, in an unpublished document of November, 1971 suggests:

- . . . three main levels of training together with Day Release and Evening Courses in association with the first two levels.
- i. Technician Course (1st and 2nd year)
- ii. Craft courses (1st and 2nd year)
- iii. Short term and limited emergency courses (to fill semi-skilled immediate needs as these needs might arise) (3, 3).

#### State Administration of Education

The Minister of Education, a member of Parliament, is responsible to the cabinet of Grenada for all matters pertaining to education in the state. The responsibilities of the Minister of Education are as follows:

- (a) To promote the education of the people of Grenada and to establish institutions devoted to that purpose by means of which he (she) shall thereby foster the spiritual,





- moral, mental, social and physical development of the community.
- (b) To frame and execute effectively and efficiently an educational policy designed to provide a varied educational service related to the changing needs of the community.
  - (c) To establish a co-ordinated educational system devised as far as possible to meet the needs of all children with specific reference to their ability aptitudes, interests and ages (13, 30).

There is an appointed Board of Education which has the responsibility of advising government on educational policy, as well as on matters which may be, from time to time, referred to it. The appointed Chairman of the Board of Education is the Chief Education Officer of the Education Department, who is in charge of the entire business of education in the state. To assist him in carrying out the duties of the department are education officers and supervisors. These personnel are responsible for various areas of departmental activities, such as supervision of instruction, designing curriculum and conducting the day to day activities of the Education Department. Figure 2 provides a graphic representation of the organization of education in Grenada.

There are two main types of primary schools in Grenada: government schools and denominational schools. The government schools are administered by the Education Department while the denominational schools are managed by a dual system -- a form of partnership -- which enables government and church to work effectively together. Each denominational primary school is controlled by a Board of Management consisting of not fewer than three members appointed by the authority (Church) who established the school (13, 32). Government is responsible for the payment of teacher salaries, the approval of staff



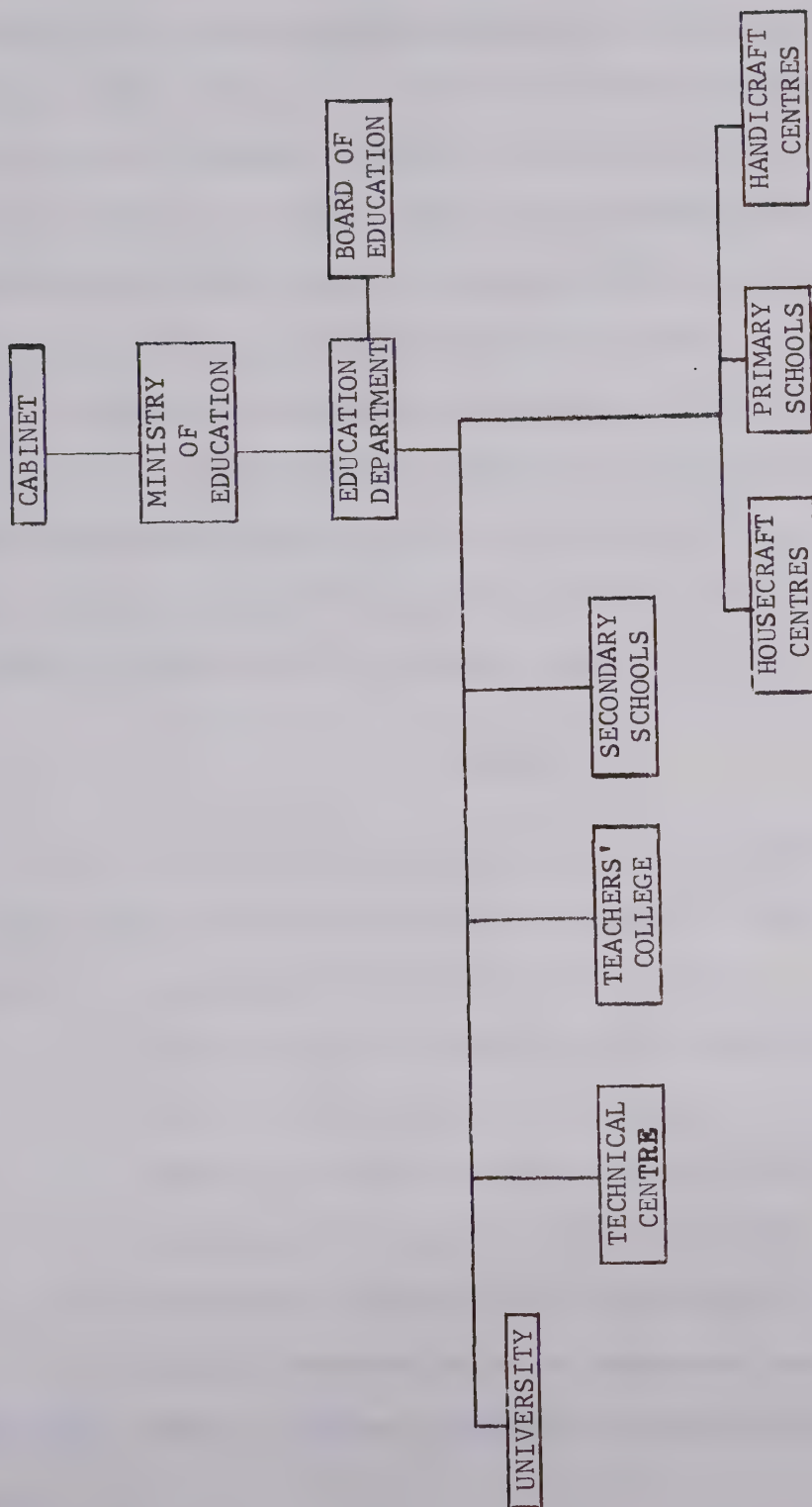


FIGURE 2

GENERAL ORGANIZATION OF EDUCATION IN GRENADA



appointments and the supervision of instruction.

The United Nations Educational, Scientific, and Cultural Organization's World Survey of Education of 1955 reports that in Grenada slight control is generally exercised by the Department of Education over secondary schools. "Even in the case of Government secondary schools the responsibility for administration is commonly delegated to a large extent to the principal or head teacher who is usually assisted by an advisory body" (18, 753).

Funds for expenditure on education are voted from the revenue of the state. Denominational schools which are recognized often receive financial assistance up to 100 per cent from the government. Such assistance is generally given in respect of the employment of teachers and expenses of a recurring nature (18, 752).

#### SUMMARY

The review of the literature concerning evaluative studies of industrial arts programs revealed a number of areas of major concern in evaluating an industrial arts program:

1. Organization for industrial arts instruction
2. Nature of industrial arts offerings
3. Adequacy of physical facilities for instruction
4. Direction of learning in industrial arts
5. Outcomes of industrial arts instruction
6. Special characteristics of industrial arts programs.

These major areas of concern suggested the specific objectives of the study.





The review of the literature concerning evaluation in general suggested that evaluation of educational programs can be appropriately performed by using the teachers who are intimately involved in the program. This method of self-evaluation was used to collect pertinent data for the study.

Finally, the review of the literature on the history and administration of education in Grenada provided a background and perspective for the evaluation of the industrial arts program in the primary schools of Grenada.



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## CHAPTER III

### METHODOLOGY

In this chapter, the methodology used to conduct the study and collect the necessary data for analysis will be presented.

#### CRITERIA USED TO SELECT PARTICIPATING SCHOOLS

All the Grenadian schools, which met the following criteria, were selected for participation in the study: .

1. Each participating primary school had to have industrial arts facilities as defined in Chapter I.
2. Each participating primary school had to satisfy the definition of a primary school as defined in Chapter I.
3. The industrial arts facilities of each participating primary school had to be in use for instruction in industrial arts at the time of the study.

#### POPULATION

The population for the study consisted of twelve primary schools which met the criteria established for the selection of participating schools. The name and locations of these schools are given on the map presented as Figure 3.

The individuals who were requested to evaluate the industrial arts program of each participating school were the teachers in charge of instruction in the industrial arts program of each school.





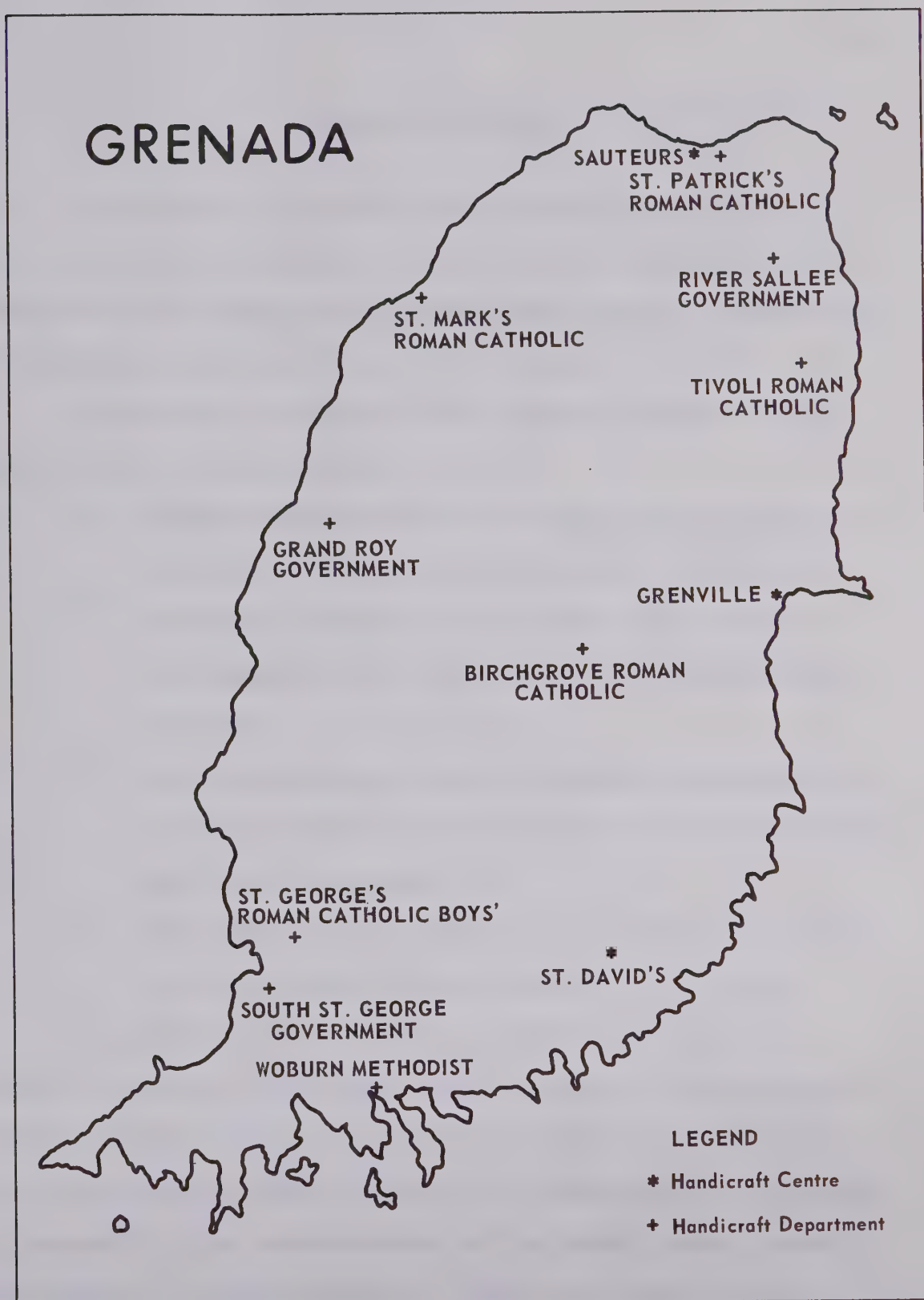


Figure 3

LOCATION OF PARTICIPATING SCHOOLS



## RESEARCH INSTRUMENT

As indicated in Chapter I, the instrument used for the collection of pertinent data for this study was a modified version of Section D-11 of the Evaluative Criteria, 1960 Edition, published by the National Study of Secondary School Evaluation (1, 153).

Section D-11 was chosen as the research instrument for the study for the following reasons:

1. Although a later edition of the Evaluative Criteria was published in 1970, the 1960 edition was used because information regarding the more recent publication was not available to the researcher at the time the study commenced.
2. This particular instrument is designed to evaluate those aspects of industrial arts which are listed as the specific objectives of the study.
3. The content of the instrument is in harmony with the definition of industrial arts selected for the study.

It should be noted that the instrument was designed for secondary schools in the United States of America. The age group of students commonly found in these schools overlaps the upper portion of the age group of students found in the primary schools of Grenada. In Grenada it is the senior students of the primary school, those approximately 12 to 16 years of age, who receive industrial arts instruction.

The original instrument was modified in several ways. Because



it was not possible to provide the participants with the necessary background information basic to Section VII of the instrument, this section was deleted from the instrument.

Similarly, because it was not possible to establish self-evaluation committees as prescribed by the guidelines for administering the Evaluative Criteria, the instructions pertaining to formation of evaluative committees and their responsibilities (even though this removes a check on the accuracy of individual teachers' evaluations) were excluded from the instructions provided to participants of this study.

The written instructions that accompanied the research instrument (Appendix B) were explained to the participants by the researcher to insure that the instructions were understood.

The research instrument consisted of three sections:

1. Checklists: the items in this section requested the participants to provide a factual description of the program, facilities, and practices of the school with the use of five letters:
  - E - provision or condition is made extensively
  - S - provision or condition is made to a moderate extent
  - L - provision or condition is very limited or missing but needed
  - M - provision or condition is missing but its need is questioned
  - N - provision or condition is not desirable or does not apply (1, 154).





2. Evaluations: The items in this section requested the participant to provide ratings as to how well the school is fulfilling its objectives. The participants were to use the numbers from one to five where ONE represented a rating of POOR, TWO a rating of FAIR, THREE a rating of GOOD, FOUR a rating of VERY GOOD, and FIVE a rating of EXCELLENT. For items dealing with provisions or conditions that were missing but their need questioned "M" was used and "N" was used to indicate that provisions or conditions were missing but did not apply.
3. Comments: The items in this section followed each of the evaluations sections in the instrument and requested the participant to elaborate or express his feelings more fully regarding the industrial arts program in his school.

### Reliability

The original form of the Evaluative Criteria of the National Study of Secondary School Evaluation has been revised several times since its publication in 1940. In discussing these revisions, the authors of Evaluative Criteria reported that:

In addition to studying . . . written returns from the field, the Director of the Revision Program, in the summers of 1955, 1956, and 1957, made visits to many persons throughout the United States to secure additional reactions and suggestions from those having responsibility for the evaluation of secondary schools in their areas.

National associations interested in various phases of secondary schools were asked to appoint committees to make specific suggestions for modification of the areas of their specialties . . . Draft revisions were prepared for all areas through a more or less typical workshop procedure (1, 4).



Prior to the implementation of these revisions, they were weighed and modified by "specialists" and "generalists" of different interest and experience. According to Vilaiprom, "the purpose of these numerous revisions was to secure a more reliable instrument" (2, 56).

### Validity

The extensive use and frequent revision of the instrument by both "specialists" and "generalists" of different interest and experience establishes the validity of the instrument for use in evaluating industrial arts programs in the United States. The provision for participants to insert additional items and to eliminate irrelevant items, by rating them as "N", serves to extend the validity of the instrument to the evaluation of the industrial arts program in Grenada.

Self-evaluation using the Evaluative Criteria, 1960 Edition was considered to be valid even without the use of visiting committees, as suggested by the authors of the Evaluative Criteria to the effect that, "school staff may use the self-evaluation as a basis for improving the program either with or without the use of a visiting committee" (1, 5).

### Data Collection

Permission to use Section D-11 of the Evaluative Criteria was granted by the Executive Secretary of the National Study of Secondary School Evaluation (Appendix A).

The researcher travelled to the State of Grenada to administer the instrument. Permission to conduct the study was granted by the



then Acting Chief Education Officer, Mr. J. N. Morris on the condition that the research would be approved by both the principal of the Grenada Technical Centre, Mr. J. D. Cummings, and the principal of the Grenada Technical College, Mr. D. Camp. Both these gentlemen readily granted permission to conduct the study.

The researcher then visited the industrial arts teachers responsible for the industrial arts program in each of the twelve participating primary schools. During these visits each teacher was informed of the purpose of the research, and his participation was solicited. All twelve industrial arts teachers visited, agreed to participate in the study by completing the research instrument.

The researcher then delivered a copy of the research instrument to each of the participants who were given instructions on how to complete the instrument. The instrument was left with each participant for completion. Participants were requested to mail the completed instrument to the researcher. A visit was made to ten participants two weeks later to encourage them to complete and return the instrument. Within a period of five weeks, eleven completed copies of the instrument were returned. The twelfth and final copy of the instrument was received by the researcher at the University of Alberta.

Data from the twelve copies of the instruments were analyzed by the researcher and from these data conclusions and recommendations for the study were made.

#### SUMMARY

Data for this study were collected from the twelve teachers



responsible for instruction in the twelve industrial arts facilities functioning at the primary level in Grenada at the time of the study.

The researcher travelled to the State of Grenada to administer the instrument (Section D-11 of the Evaluative Criteria, 1960 Edition). After obtaining permission to conduct the study the researcher visited the teachers to distribute the questionnaires. In five weeks eleven of the twelve completed questionnaires were returned and the twelfth questionnaire was received by the researcher after his return to The University of Alberta.

The data were abstracted and analyzed by the researcher, and from the analysis, conclusions and recommendations were made.





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## CHAPTER IV

### ANALYSIS OF THE DATA

The methodology used to collect the necessary data for the study was presented in Chapter III. These data will be analyzed and presented in this chapter.

#### DATA ABSTRACTION

The twelve completed copies of the instrument were examined by the researcher to determine if any difficulties would arise in abstracting the data. From this examination it was found that a number of participants had used coding which did not conform to that provided in the instructions of the instrument. Each response in which the coding did not follow the instructions provided with the instrument was translated and recorded in terms of the coding provided with the instrument. To minimize the possibility of bias in the translation of the coding, each decision concerning a participant's response had to be supported by the concurrence of two other educational researchers, a specialist with a master's degree in educational administration, and a graduate student in industrial arts. The names of these individuals can be found in Appendix C.

To complete the abstraction of data, the frequency distribution of the various ratings assigned by participants was recorded in tabular form. For purposes of convenience in later analysis, the items in each section of the research instrument were tabulated separately and arranged in rank order. For checklist items the order of ranking was based on the proportion of the total number of participants assigning



a rating of "E" (extensive) or "S" (moderate). For general evaluation items the order of ranking was based on the proportion of the total number of participants rating an item as either 5 (excellent), 4 (very good), or 3 (good).

#### DATA PRESENTATION

The reader will recall that the research instrument for this study consisted of the following six sections: Organization, Nature of Offerings, Physical Facilities, Direction of Learning, Outcomes, and Special Characteristics of Industrial Arts.

A description of the coding used for recording the participants' responses to the checklist and general evaluations items of the instrument is provided in Chapter III.

To present the analysis of the data tabulated for each of these sections, the following method was employed: With reference to specific items of the research instrument, the letter or number of the item will be given first, followed by a ranking ratio, enclosed in parenthesis thus: 6 (5/12). With reference to checklist items, the ratio, enclosed in parenthesis, expresses the proportion of the total number of participants who rated an item as either "E" (extensive) or "S" (moderate). With reference to general evaluation items the ratio expresses the proportion of the total number of participants rating an item as either 5 (excellent), 4 (very good), or 3 (good).

In presenting a checklist item which was rated as "L" (limited or missing but needed) or a general evaluations item which was rated as 2 (fair) or 1 (poor) by six or more of the twelve participants, the





ranking ratio in parenthesis will be replaced by the proportion of the participants who assigned that rating.

### Organization of Industrial Arts

Table I, Organization of Industrial Arts, presents the frequency distribution of the responses of the participants to the fifteen items in the Checklist dealing with the organization of industrial arts. The data in Table I indicate that, of the fifteen items presented, nine were rated as "E" (extensive) or "S" (moderate), by 6/12 or more of the participants. These nine items in rank order were 3 (10/12), 8 (10/12), 7 (8/12), 9 (8/12), 11 (7/12), 5 (7/12), 13 (6/12), 4 (6/12) and 14 (6/12). The six remaining items in rank order were 1 (5/12), 2 (5/12), 10 (5/12), 12 (2/12), 15 (1/12), and 6 (1/12).

Table II, General Evaluations of Organizations, presents the frequency distribution of the responses of the participants to the three items of the general evaluations of the organization of industrial arts. These data indicate that two of the items were rated as 5 (excellent), 4 (very good), or 3 (good) by 6/12 or more of the participants. These two items in rank order were "a" (9/12) and "b" (9/12). The one remaining item, "c" (1/12), was rated as either 2 (fair) or 1 (poor) by eleven participants.

Seven of the twelve participants provided comments on the Organization of Industrial Arts. Their comments can be summarized as follows:

1. Five of the participants made mention of the fact that



TABLE I  
ORGANIZATION OF INDUSTRIAL ARTS

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
3.	A sequence of graded experiences is provided within each industrial arts course.	3	7	10/12	0	0	1	1
8.	The length of class periods is of sufficient time.	7	3	10/12	1	0	0	1
7.	Special industrial arts classes are provided for beginning and advanced students.	4	4	8/12	1	0	2	1
9.	Class sizes are consistent with the nature of courses.	5	3	8/12	2	0	1	1
11.	Program development is a co-operative effort of all people concerned.	2	5	7/12	1	2	1	1
5.	Industrial arts program is organized so that it is flexible.	1	6	7/12	3	0	1	1
13.	The industrial arts program is coordinated with other courses.	3	3	6/12	2	1	2	1
4.	Specific industrial arts objectives or goals are identified with each course offering.	3	3	6/12	3	1	1	1
14.	Repair and production jobs are permitted in industrial arts shops.	1	5	6/12	3	1	1	1
1.	Industrial arts courses are available to all students.	1	4	5/12	3	1	2	1



TABLE I CONTINUED  
ORGANIZATION OF INDUSTRIAL ARTS

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
2.	Emphasis is placed on a variety of learning experiences in several industrial arts areas.	0	5	5/12	3	1	2	1
10.	Financial support for industrial arts is adequate.	0	5	5/12	5	1	0	1
12.	The industrial arts staff cooperates with the public relations program of the school.	1	1	2/12	5	1	3	1
15.	Free periods for the industrial arts teachers are of sufficient time.	0	1	1/12	3	4	3	1
6.	Industrial arts facilities are available to students outside of regular class time.	1	0	1/12	5	4	1	1

E<sup>1</sup> = provision is extensive

S<sup>2</sup> = provision is moderate

R<sup>3</sup> = proportion of the total number of participants rating an item as E or S

L<sup>4</sup> = provision is limited or missing but needed

M<sup>5</sup> = provision is missing but its need is questioned

N<sup>6</sup> = does not apply

NR<sup>7</sup> = no response



TABLE II  
GENERAL EVALUATION OF ORGANIZATION

Item No.	Item Statement	Frequency Distribution of Item Ratings								
		5 <sup>1</sup>	4 <sup>2</sup>	3 <sup>3</sup>	R <sup>4</sup>	2 <sup>5</sup>	1 <sup>6</sup>	M <sup>7</sup>	N <sup>8</sup>	NR <sup>9</sup>
a.	To what extent are industrial courses available to all students?	1	4	4	9/12	1	2	0	0	0
b.	Are schedules, time allotments and class sizes appropriate for industrial arts course offerings?	0	4	5	9/12	1	2	0	0	0
c.	How adequate is financial support for the industrial arts program?	0	0	1	1/12	6	5	0	0	0

5<sup>1</sup> = excellent

2<sup>5</sup> = fair

4<sup>2</sup> = very good

1<sup>6</sup> = poor

3<sup>3</sup> = good

M<sup>7</sup> = missing but its need  
is questioned

R<sup>4</sup> = Proportion of the total  
number of participants  
rating an item as 5, 4,  
or 3

N<sup>8</sup> = does not apply

NR<sup>9</sup> = no response





girls were not given access to the industrial arts courses. One of these five pointed out that industrial arts courses were not available to all boys.

2. Four participants stated that financial support for industrial arts was very inadequate.
3. Two participants noted that no adult evening classes were available.
4. One participant indicated that students and parents seemed to feel that industrial arts was only for students of less than average ability.
5. One participant mentioned that time was always insufficient to conduct a good lesson.
6. One participant felt that too little emphasis was placed on the importance of industrial arts.
7. One participant stated that class sizes were too large and no provision for non-teaching periods was made.
8. One participant stated that beginning experiences in industrial arts were of insufficient variety.
9. One participant stated that boys seldom complete the three year program offered because: a) they transfer to secondary schools, b) they drop out, or c) they start late.

### Nature of Offerings

Table III, Nature of Offerings, presents the frequency distribution of the responses of the participants to the seventeen items in the Checklist dealing with the nature of offerings of industrial arts.



TABLE III  
NATURE OF OFFERINGS

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
9.	Emphasis is placed on the development of better understanding of industrial products.	7	4	11/12	0	0	0	1
12.	Emphasis is placed on developing an ability to select, care for, and use industrial products intelligently.	4	7	11/12	0	0	0	1
1.	The industrial arts courses provide opportunities for youth to plan, construct, and evaluate in terms of their interests and aptitudes.	2	8	10/12	1	0	0	1
7.	Industrial arts program develops in each individual an attitude of pride and interest in doing useful things.	4	6	10/12	1	0	0	1
8.	Specific efforts are directed toward the development of a working knowledge about materials which will meet the needs of an average citizen.	4	6	10/12	0	1	0	1
16.	Activities in industrial arts program are organized to provide significant group activities and projects.	1	9	10/12	0	0	1	1
10.	Specific efforts are made to develop an awareness of an industrial environment.	3	6	9/12	1	0	1	1



TABLE III CONTINUED

## NATURE OF OFFERINGS

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
13.	Students and teachers plan industrial arts experiences to develop greater social adeptness.	1	8	9/12	2	0	0	1
4.	Meaningful industrial arts courses are provided for the learners.	4	4	8/12	1	2	0	1
6.	Basic skills and concepts are used as tools in solving problems.	1	7	8/12	1	2	0	1
14.	Basic skills are continually emphasized and made a part of the instructional program.	5	3	8/12	1	0	2	1
15.	Emphasis is placed on a continuous and coordinated department-wide program of safety.	5	3	8/12	2	0	1	1
17.	Student-made projects are used in the teaching-learning process.	4	4	8/12	1	1	1	1
2.	Experiences are provided, in each industrial arts area, suitable to students' ability and scope of the program.	3	3	6/12	3	1	1	1
5.	Each area of the industrial arts program emphasizes the role that industry has played in modern society.	1	4	5/12	3	1	2	1





TABLE III CONTINUED

## NATURE OF OFFERINGS

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
11.	An overview of working conditions and labor-management is included in the industrial arts program.	0	5	5/12	5	0	1	1
3.	A broad content using a variety of industrial processes and materials is offered in each industrial arts program	0	4	4/12	4	2	1	1

E<sup>1</sup> = provision is extensiveS<sup>2</sup> = provision is moderateR<sup>3</sup> = proportion of the total number of participants rating an item as E or SL<sup>4</sup> = provision is limited or missing but neededM<sup>5</sup> = provision is missing but its need is questionedN<sup>6</sup> = does not applyNR<sup>7</sup> = no response



These data indicate that, of the seventeen items presented, fourteen were rated as either "E" (extensive) or "S" (moderate) by 6/12 or more of the participants. These fourteen items in rank order were 9 (11/12), 12 (11/12), 1 (10/12), 7 (10/12), 8 (10/12), 16 (10/12), 10 (9/12), 13 (9/12), 4 (8/12), 6 (8/12), 14 (8/12), 15 (8/12), 17 (8/12), and 2 (6/12). The three remaining items in rank order were 5 (5/12), 11 (5/12), and 3 (4/12).

Table IV, General Evaluations of Nature of Offerings, presents the frequency distribution of the responses of the participants to the three items of the general evaluations of the nature of offerings of industrial arts. These data indicate that two of the items were rated as 5 (excellent), 4 (very good), or 3 (good) by 6/12 or more of the participants. These two items in rank order were "b" (8/12) and "c" (6/12). The one remaining item "a" (5/12) was rated as either 2 (fair), 1 (poor), "N" (not applicable) or "NR" (no response) by seven of the twelve participants.

Five of the twelve participants provided comments on the Nature of Offerings of industrial arts. All five of these participants stated that a greater variety of industrial arts courses is needed. One of these participants stated that courses offered are too limited to prepare boys for an occupation and that more areas, specifically metalwork, electricity and electronics are needed.

### Physical Facilities

Table V, Physical Facilities, presents the frequency distribution of the responses of the participants to the 40 items in



TABLE IV

## GENERAL EVALUATIONS OF NATURE OF OFFERINGS

Item No.	Item Statement	Frequency Distribution of Item Ratings								
		5 <sup>1</sup>	4 <sup>2</sup>	3 <sup>3</sup>	R <sup>4</sup>	2 <sup>5</sup>	1 <sup>6</sup>	M <sup>7</sup>	N <sup>8</sup>	NR <sup>9</sup>
b.	To what extent are scope and sequence of industrial arts courses related to interest, ability, and developmental needs of pupils?	1	2	5	8/12	3	0	0	0	1
c.	To what extent do the offerings provide for exploratory or tryout experiences with a variety of tools, materials and industrial processes?	0	4	2	6/12	3	1	0	1	1
a.	To what extent are the information and experiences offered in the industrial arts program related to modern industry?	0	1	4	5/12	3	2	0	1	1

5<sup>1</sup> = excellent4<sup>2</sup> = very good3<sup>3</sup> = goodR<sup>4</sup> = Proportion of the total number of participants rating an item as 5, 4, or 32<sup>5</sup> = fair1<sup>6</sup> = poorM<sup>7</sup> = missing but its need is questionedN<sup>8</sup> = does not applyNR<sup>9</sup> = no response



TABLE V  
PHYSICAL FACILITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
34.	All tools and equipment used in school shops receive proper maintenance.	6	5	11/12	1	0	0	0
5.	Floors are in good condition and suited to the area in which they are located; precautions are taken against slippery floors with machine areas receiving special attention.	1	9	10/12	0	1	1	0
40.	Industrial arts shops are clean and neat; good planning and organization are in evidence.	2	8	10/12	1	0	1	0
6.	Facilities for ventilation commensurate with good working conditions are available.	4	5	9/12	1	2	0	0
17.	School shop contains a convenient and centrally located tool and supply centre and, where applicable, an adequate number of well-laid-out tool panel areas for special tools.	1	8	9/12	3	0	0	0
37.	One or more well-located permanent chalkboards, ample in size and good in condition, are provided in each school shop or drawing room.	4	5	9/12	3	0	0	0
28.	Selection of tools and machines is based on their instructional value.	2	6	8/12	1	0	3	0





TABLE V CONTINUED  
PHYSICAL FACILITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
9.	Each shop facility has a minimum of two entrance-exit doors with a width of 36 inches or more.	5	2	7/12	4	0	1	0
10.	Ceiling height is appropriate, i.e. between 12 and 24 feet in all shops and drawing rooms; and where applicable, ceilings are constructed of a material having a high co-efficient of sound absorption.	4	3	7/12	5	0	0	0
29.	There is a quantity and variety of tools, instruments, and equipment to meet the needs of the industrial arts program.	1	6	7/12	4	1	0	0
12.	Shop walls are durable and easily cleaned from the floor to top-of-door height. Sound absorbing materials are used on upper-wall surfaces wherever the amount of noise suggests special wall treatment.	2	4	6/12	2	1	3	0
3.	Room proportions are within the range from a square to a rectangle of 1:1½ proportions; minimum width is 30 feet. All areas of the shop may be observed by the teacher from any position.	1	4	5/12	6	1	0	0



TABLE V CONTINUED  
PHYSICAL FACILITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
4.	Natural light is controlled to eliminate glare. Sufficient supplemental artificial light, properly diffused and distributed, is provided for a minimum of 30 foot-candles at bench height. Local lighting is provided in critical work areas.	2	3	5/12	7	0	0	0
23.	To provide flexibility, one-third more work stations than maximum class enrolment is available. Aisle space is ample.	1	4	5/12	6	0	1	0
15.	Convenient office or desk space is provided.	2	2	4/12	6	1	1	0
7.	Exhaust ventilation equipment is available in areas producing excessive heat, fumes, gases and dust.	2	1	3/12	1	3	5	0
8.	Gas, water, electrical and compressed facilities are adequately provided and properly located.	1	2	3/12	2	1	6	0
13.	Washing facilities and drinking fountains, appropriate in size and location, are provided.	1	2	3/12	6	2	1	0
19.	Safe storage is provided for all supplies; storage area accommodates full length stock and all appropriate materials.	1	2	3/12	8	1	0	0



TABLE V CONTINUED  
PHYSICAL FACILITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
20.	Storage areas for student projects under construction are provided.	1	2	3/12	7	1	1	0
21.	Lockers are adequate in number and size and located so as to avoid crowding.	1	2	3/12	7	1	1	0
22.	Equipment is arranged with reference to sequence and their relationship to other areas. Adequate clearances are provided around all equipment.	1	2	3/12	3	2	4	0
38.	One or more well located tackboards, adequate in size and condition, are provided in each school shop.	1	2	3/12	6	2	1	0
1.	Industrial arts shops are appropriately located as a unit. Outside entrances are provided for handling supplies, equipment and projects.	1	1	2/12	4	3	3	0
2.	An average of 100 square feet of floor area is provided per student in industrial arts shops.	1	1	2/12	7	2	1	0
14.	A display of sufficient size and lighting, is appropriately located.	0	2	2/12	6	3	1	0
16.	Filing space is near the instructor's desk and is adequate for all necessary records and materials.	1	1	2/12	9	1	0	0





TABLE V CONTINUED  
PHYSICAL FACILITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
18.	Principles of "Color dynamics are followed throughout the shops and equipment to avoid glare.	1	1	2/12	4	4	2	0
25.	A demonstration and discussion area, with space for each student, is provided.	1	1	2/12	7	2	1	0
26.	Convenient shop, library, and planning facilities are located away from noises and dirty areas. Space for book, magazines, and folder storage is available.	0	2	2/12	6	2	2	0
24.	Finishing areas are adequate in size, light, ventilation, free of dust, easily supervised and appropriately located.	0	1	1/12	9	1	1	0
31.	Power and manually operated machines are provided with effective guards that are used at all times.	0	1	1/12	4	2	5	0
32.	Conveniently located and appropriately painted switches are provided on accessible locations on all power machines.	0	1	1/12	3	0	8	0
33.	A master electrical is centrally located. All machines, wired in with building have disconnect switches, grounds, and controls providing undervoltage and overload protection.	0	1	1/12	2	2	7	0



TABLE V CONTINUED  
PHYSICAL FACILITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
11.	A ventilated, fire-resistant cabinet is provided for the storage of combustible materials. Soiled rags are stored in a metal, self-closing container. Appropriately located, and of correct size and type, are fire extinguishers.	0	0	0/12	5	2	5	0
27.	Appropriate and convenient film-showing facilities are provided.	0	0	0/12	7	2	3	0
30.	Unit-type machines with self-contained motors are used; equipment is adapted to the size and maturity of students.	0	0	0/12	6	2	4	0
35.	Appropriately marked safety zones are identified around machines in hazardous areas.	0	0	0/12	1	3	8	0
36.	Safety clothing and protective devices are provided.	0	0	0/12	3	3	6	0
39.	Motion pictures, filmstrip, slide, and opaque projectors are available within the school when needed.	0	0	0/12	7	3	2	0

E<sup>1</sup> = provision is extensive

S<sup>2</sup> = provision is moderate

R<sup>3</sup> = proportion of the total number of participants rating an item as E or S

L<sup>4</sup> = provision is limited or missing but needed

M<sup>5</sup> = provision is missing but its need is questioned

N<sup>6</sup> = does not apply

NR<sup>7</sup> = no response



the Checklist dealing with the physical facilities of industrial arts. These data indicate that five of these items were rated "N" (not applicable) by 6/12 or more of the participants. Of the remaining 35 items, eleven items were rated "E" (extensive) or "S" (moderate) by 6/12 or more of the participants. These eleven items in rank order were 34 (11/12), 5 (10/12), 40 (10/12), 6 (9/12), 17 (9/12), 37 (9/12), 28 (8/12), 9 (7/12), 10 (7/12), 29 (7/12), and 12 (6/12). On six of the 35 items none of the possible ratings had been given by more than five of the twelve participants. These six items in rank order were 7 (3/12), 22 (3/12), 1 (2/12), 18 (2/12), 31 (1/12) and 11 (9/12). Eighteen of the 35 items were rated "L" (limited or missing but needed) by 6/12 or more of the participants. These eighteen items, listed with the proportion of participants rating the item as "L", were 16 (9/12), 24 (9/12), 19 (8/12), 4 (7/12), 20 (7/12), 21 (7/12), 2 (7/12), 25 (7/12), 27 (7/12), 39 (7/12), 3 (6/12), 23 (6/12), 15 (6/12), 13 (6/12), 38 (6/12), 14 (6/12), 26 (6/12), and 30 (6/12).

Table VI, General Evaluations of Physical Facilities, presents the frequency distribution of the responses of the participants to the four items of the General Evaluations of Physical Facilities of Industrial Arts. These data indicate that one of the items was rated either 5 (excellent), 4 (very good) or 3 (good) by 6/12 or more of the participants. This one item was "c" (8/12). Three of the four items were rated 2 (fair) or 1 (poor) by 6/12 or more of the participants. These three items, listed with the proportion of participants rating the item as either 2 or 1, were "a" (9/12), and "d" (9/12), and "b" (7/12).



TABLE VI

## GENERAL EVALUATION OF PHYSICAL FACILITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings								
		5 <sup>1</sup>	4 <sup>2</sup>	3 <sup>3</sup>	R <sup>4</sup>	2 <sup>5</sup>	1 <sup>6</sup>	M <sup>7</sup>	N <sup>8</sup>	NR <sup>9</sup>
c.	How satisfactory are health and safety measures?	3	3	2	8/12	2	2	0	0	0
a.	How satisfactory are the space and layout of industrial arts shops?	1	1	1	3/12	6	3	0	0	0
d.	How adequate are provisions for storage?	1	0	2	3/12	6	3	0	0	0
b.	How adequate are the machinery and equipment?	0	0	1	1/12	3	4	2	1	1

5<sup>1</sup> = excellent2<sup>5</sup> = fair4<sup>2</sup> = very good1<sup>6</sup> = poor3<sup>3</sup> = goodM<sup>7</sup> = missing but its need is questionedR<sup>4</sup> = proportion of the total number of participants rating an item as 5, 4, or 3N<sup>8</sup> = does not applyNR<sup>9</sup> = no response





Six of the twelve participants provided comments on physical facilities. Their comments can be summarized as follows:

1. Four participants stated that power tools and machines were needed.
2. Four participants stated that storage space for student's projects or supplies was inadequate.
3. Two participants stated that space for industrial arts instruction was inadequate.
4. One participant indicated that work-benches were inadequate and tools were insufficient. Another participant indicated an urgent need for a finishing room.
5. One participant indicated that no water facilities were provided.
6. One participant indicated that only one entrance-exit door was provided.

Direction of Learning: A. Instructional Staff

Table VII, Direction of Learning: Sub-section A. Instructional Staff, presents the frequency distribution of the responses of the participants to the twelve items in the Checklist dealing with the instructional staff of industrial arts. These data indicate that, of the twelve items presented, ten were rated as "E" (extensive) or "S" (moderate) by 6/12 or more of the participants. These ten items, in rank order were 4 (11/12), 3 (9/12), 6 (9/12), 8 (9/12), 12 (9/12), 7 (8/12), 2 (7/12), 9 (6/12), 10 (6/12), and 11 (6/12). The remaining two items in rank order were 1 (5/12) and 5 (5/12).



TABLE VII

## DIRECTION OF LEARNING

## SUB-SECTION A. INSTRUCTIONAL STAFF

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
4.	Industrial arts staff members recognize the importance of activities in the instructional program.	7	4	11/12	0	0	0	1
3.	Industrial arts teachers possess competence in a variety of teaching methods.	2	7	9/12	2	0	0	1
6.	Industrial arts teachers strive to keep abreast of professional literature and research in the field of education.	3	6	9/12	2	0	0	1
8.	Industrial arts teachers are aware of teaching problems in other areas and work for the improvement of the whole school program.	6	3	9/12	2	0	0	1
12.	Industrial arts teachers maintain an active interest in professional advancement, including participation in educational organizations.	5	4	9/12	2	0	0	1
7.	Industrial arts teachers discuss their curriculum and sponsor activities which help their colleagues to a better understanding of the industrial arts program.	5	3	8/12	3	0	0	1
2.	Industrial arts staff members are properly qualified and certified.	1	6	7/12	3	1	0	1



## TABLE VII CONTINUED

## DIRECTION OF LEARNING

## SUB-SECTION A. INSTRUCTIONAL STAFF

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
9.	Industrial arts teachers understand counselling procedures and guidance services and help students with educational and vocational choices.	1	5	6/12	4	0	1	1
10.	Teachers are qualified in first aid and safety procedures.	1	5	6/12	3	2	0	1
11.	Industrial arts teachers maintain active participation in in-service education through formal study and other professional activity.	2	4	6/12	2	1	2	1
1.	A well-defined philosophy of education is held by the industrial arts teachers.	0	5	5/12	5	1	0	1
5.	Staff members invite parent and community reactions to the industrial arts program.	0	5	5/12	3	2	1	1

E<sup>1</sup> = provision is extensiveS<sup>2</sup> = provision is moderateR<sup>3</sup> = proportion of the total number of participants rating an item as E or SL<sup>4</sup> = provision is limited or missing but neededM<sup>5</sup> = provision is missing but its need is questionedN<sup>6</sup> = does not applyNR<sup>7</sup> = no response





Table VIII, General Evaluations of Instructional Staff, presents the frequency distribution of the responses of the participants to the four items of the General Evaluations of Instructional Staff. These data indicate that all four of the items were rated as 5 (excellent), 4 (very good), or 3 (good) by 6/12 or more of the participants. The rank order of these four items was "d" (9/12), "a" (8/12), "c" (7/12), and "b" (6/12).

Four of the twelve participants provided comments on Instructional Staff. Their comments can be summarized as follows:

1. All four of these participants stressed the need for more teacher training.
2. Two participants stated that there should be more opportunities for conferences among industrial arts teachers. On the other hand, another teacher stated that lively discussions between industrial arts teachers already existed.
3. One participant indicated that there was a need for more professional literature.

#### Direction of Learning: B. Instructional Activities

Table IX, Direction of Learning: Sub-section B. Instructional Activities, presents the frequency distribution of the responses of the participants to the eighteen items in the Checklist dealing with the instructional activities of industrial arts. These data indicate that, of the eighteen items presented, twelve were rated as "E" (extensive) or "S" (moderate) by 6/12 or more of the participants.



TABLE VIII

## GENERAL EVALUATIONS OF INSTRUCTIONAL STAFF

Item No.	Item Statement	Frequency Distribution of Item Ratings								
		5 <sup>1</sup>	4 <sup>2</sup>	3 <sup>3</sup>	R <sup>4</sup>	2 <sup>5</sup>	1 <sup>6</sup>	M <sup>7</sup>	N <sup>8</sup>	NR <sup>9</sup>
d.	To what extent do industrial arts staff members discuss educational problems with fellow teachers, administrators and the lay public?	2	2	5	9/12	1	1	0	0	1
a.	To what extent do the staff members possess a well-defined point of view toward industrial arts education.	1	3	4	8/12	2	1	0	0	1
c.	To what extent have the industrial arts staff members informed themselves about current educational literature and research?	0	3	4	7/12	1	2	0	0	2
b.	To what extent do staff members possess satisfactory qualifications?	0	3	3	6/12	4	0	1	0	1

5<sup>1</sup> = excellent4<sup>2</sup> = very good3<sup>3</sup> = goodR<sup>4</sup> = proportion of the total number of participants rating an item as 5, 4, or 32<sup>5</sup> = fair1<sup>6</sup> = poorM<sup>7</sup> = missing but its need is questionedN<sup>8</sup> = does not applyNR<sup>9</sup> = no response



TABLE IX

## DIRECTION OF LEARNING

## SUB-SECTION B. INSTRUCTIONAL ACTIVITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
2.	Lesson planning, ranging from an overview of the years' program to daily instructional activities, is in evidence.	2	8	10/12	0	1	0	1
3.	In developing each phase of the industrial arts program, teachers recognize student ability levels.	8	2	10/12	1	0	0	1
4.	Specific efforts are directed toward the attainment of appropriate social relationships and good work habits and attitudes.	5	5	10/12	1	0	0	1
5.	Students working groups exchange ideas in the solution of problems.	5	5	10/12	1	0	0	1
9.	Students learn the sources of materials.	2	8	10/12	1	0	0	1
11.	Students develop appropriate drawings or plans and follow a systematic order of procedures in relation to a project.	2	8	10/12	1	0	0	1
6.	Industrial arts education attempts to familiarize youth with the more meaningful aspects of modern industry.	5	4	9/12	2	0	0	1
13.	Numerous activities are planned in the industrial arts program to help students develop qualities of leadership.	3	6	9/12	2	0	0	1



## TABLE IX CONTINUED

## DIRECTION OF LEARNING

## SUB-SECTION B. INSTRUCTIONAL ACTIVITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
12.	Community resources are used as aids to instruction.	3	5	8/12	1	1	1	1
8.	Students learn how a variety of commercial products are made.	3	4	7/12	3	0	1	1
10.	Students study the characteristics and limitations of industrial materials.	0	6	6/12	4	0	1	1
18.	Staff members employ a wide variety of suitable materials and techniques of instruction.	2	4	6/12	2	2	1	1
7.	Industrial arts activities provide an opportunity for boys and girls to become familiar with, and to use many of, the basic tools and machines of industry.	1	4	5/12	4	1	1	1
14.	Students draw on many out-of-school sources of information in fulfilling assignments.	1	4	5/12	4	1	1	1
17.	Students take an active part in the safety program by serving as student safety advisors, solving thought-inducing safety problems, and taking safety tests.	2	3	5/12	2	2	2	1
1.	Learning activities in the industrial arts program related directly to the attainment of desired student behavior changes are identified with special industrial arts objectives.	1	3	4/12	1	2	2	3





## TABLE IX CONTINUED

## DIRECTION OF LEARNING

## SUB-SECTION B. INSTRUCTIONAL ACTIVITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
15.	Provisions are made for students to participate in related extra-curricular activities.	0	3	3/12	5	1	2	1
16.	Audio-visual materials are used in the instructional program.	0	3	3/12	5	0	3	1

E<sup>1</sup> = provision is extensiveS<sup>2</sup> = provision is moderateR<sup>3</sup> = proportion of the total number of participants rating an item as E or SL<sup>4</sup> = provision is limited or missing but neededM<sup>5</sup> = provision is missing but its need is questionedN<sup>6</sup> = does not applyNR<sup>7</sup> = no response



These twelve items in rank order were 2 (10/12), 3 (10/12), 4 (10/12), 5 (10/12), 9 (10/12), 11 (10/12), 6 (9/12), 13 (9/12), 12 (8/12), 8 (7/12), 10 (6/12), and 18 (6/12). The remaining six items in rank order were 7 (5/12), 14 (5/12), 17 (5/12), 1 (4/12), 15 (3/12), and 16 (3/12).

Table X, General Evaluations of Instructional Activities, presents the frequency distribution of the responses of the participants to the three items of the General Evaluations of instructional activities. These data indicate that all three items were rated as 5 (excellent), 4 (very good), or 3 (good) by 6/12 or more of the participants. The rank order of these three items was "a" (10/12), "c" (9/12), and "b" (7/12).

One of the twelve participants provided comments on Instructional Activities. This participant indicated that "side programmes", other than woodwork and drawing, could not be implemented because of insufficient materials.

#### Direction of Learning: C. Instructional Materials

Table XI, Direction of Learning: Sub-section C. Instructional Materials, presents the frequency distribution of the responses of the participants to the ten items in the Checklist dealing with the instructional materials of industrial arts. These data indicate that, of the ten items presented, three were rated as "E" (extensive) or "S" (moderate) by 6/12 or more of the participants. These three items were 1 (6/12), 2 (6/12), and 8 (6/12). On two of the ten items, none of the possible ratings had been given by more than five of the



TABLE X

## GENERAL EVALUATIONS OF INSTRUCTIONAL ACTIVITIES

Item No.	Item Statement	Frequency Distribution of Item Ratings								
		5 <sup>1</sup>	4 <sup>2</sup>	3 <sup>3</sup>	R <sup>4</sup>	2 <sup>5</sup>	1 <sup>6</sup>	M <sup>7</sup>	N <sup>8</sup>	NR <sup>9</sup>
a.	How effectively do instructional activities relate to student needs and program goals?	0	4	6	10/12	1	0	0	0	1
c.	How effective is the teaching?	0	4	5	9/12	2	0	0	0	1
b.	How adequate is the planning and preparation for instructional activities?	0	5	2	7/12	2	1	0	1	1

5<sup>1</sup> = excellent4<sup>2</sup> = very good3<sup>3</sup> = goodR<sup>4</sup> = proportion of the total number of participants rating an item as 5, 4, or 32<sup>5</sup> = fair1<sup>6</sup> = poorM<sup>7</sup> = missing but its need is questionedN<sup>8</sup> = does not applyNR<sup>9</sup> = no response





TABLE XI  
DIRECTION OF LEARNING  
SUB-SECTION C. INSTRUCTIONAL MATERIALS

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
1.	A variety of teaching guides is available.	0	6	6/12	4	1	0	1
2.	Up-to-date textbooks are available.	0	6	6/12	4	1	0	1
8.	Posters, charts, graphs, and pictures are available.	0	6	6/12	5	0	0	1
6.	Descriptive material and commercial products are available for instruction.	0	5	5/12	4	2	0	1
9.	Teaching aids consisting of miniature, cutaway, and actual size projects and devices are used.	0	4	4/12	6	1	0	1
4.	Reference materials are appropriate and are within the understanding of the students.	0	3	3/12	7	1	0	1
3.	A variety of carefully selected references is available.	0	1	1/12	8	2	0	1
5.	Periodicals, pamphlets, and materials suitable for student use and related to the instructional activities are available in each area of the industrial arts program.	0	1	1/12	7	2	1	1
7.	Occupational monographs are available.	0	0	0/12	5	3	3	1



TABLE XI CONTINUED

## DIRECTION OF LEARNING

## SUB-SECTION C. INSTRUCTIONAL MATERIALS

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
10.	Films, Filmstrips, and slides are provided in all industrial arts areas.	0	0	0/12	6	2	3	1

E<sup>1</sup> = provision is extensiveS<sup>2</sup> = provision is moderateR<sup>3</sup> = proportion of the total  
number of participants  
rating an item as E or  
SL<sup>4</sup> = provision is limited or  
missing but neededM<sup>5</sup> = provision is missing but  
its need is questionedN<sup>6</sup> = does not applyNR<sup>7</sup> = no response



twelve participants. These two items in rank were 6 (5/12) and 7 (0/12). The remaining five items were rated as "L" (limited or missing but needed) by 6/12 or more of the participants. These five items listed with the proportion of participants rating the item as "L" were 3 (8/12), 4 (7/12), 5 (7/12), 9 (6/12), and 10 (6/12).

Table XII, General Evaluations of Instructional Materials, presents the frequency distribution of the responses of the participants to the three items of general evaluations of instructional materials of industrial arts. These data indicate that one item "a" (7/12) was rated as 5 (excellent), 4 (very good), or 3 (good) by 6/12 or more of the participants. One of the three items was rated as 2 (fair) or 1 (poor) by 6/12 or more of the participants. This item was "c" (7/12). On the remaining item "b" (5/12), none of the ratings (5 or 4 or 3, 2 or 1, M, N, or NR) had been given by more than five of the twelve participants.

Four of the participants provided comments on Instructional Materials. These comments can be summarized as follows:

1. Four participants indicated that more materials and drawing instruments were needed.
2. One participant stated that easy-to-follow visual aids were needed.
3. One participant stressed that there was a need for periodicals and pamphlets related to industrial arts programs.



TABLE XII

## GENERAL EVALUATIONS OF INSTRUCTIONAL MATERIALS

Item No.	Item Statement	Frequency Distribution of Item Ratings								
		5 <sup>1</sup>	4 <sup>2</sup>	3 <sup>3</sup>	R <sup>4</sup>	2 <sup>5</sup>	1 <sup>6</sup>	M <sup>7</sup>	N <sup>8</sup>	NR <sup>9</sup>
a.	To what extent are teaching guides used in the instructional program?	0	2	5	7/12	1	2	0	0	2
b.	Are texts and reference materials appropriate and of good quality?	1	1	3	5/12	3	2	0	0	2
c.	How adequate is the variety of instructional materials?	1	0	1	2/12	2	5	1	0	2

5<sup>1</sup> = excellent4<sup>2</sup> = very good3<sup>3</sup> = goodR<sup>4</sup> = proportion of the total number of participants rating an item as 5, 4, or 32<sup>5</sup> = fair1<sup>6</sup> = poorM<sup>7</sup> = missing but its need is questioned.N<sup>8</sup> = does not applyNR<sup>9</sup> = no response





Direction of Learning: D. Methods of Evaluation

Table XIII, Direction of Learning: Sub-section D. Methods of Evaluation, presents the frequency distribution of the responses of the participants to the thirteen items in the Checklist dealing with the methods of evaluation of industrial arts. These data indicate that, of the thirteen items presented, ten were rated as "E" (extensive) or "S" (moderate) by 6/12 or more of the participants. These thirteen items in rank order were 10 (11/12), 1 (10/12), 6 (10/12), 7 (10/12), 8 (10/12), 2 (7/12), 3 (7/12), 4 (7/12), 5 (6/12), and 11 (6/12). One of the thirteen items was rated as "L" (limited or missing but needed) by 6/12 or more of the participants. This item was 12 (9/12). On the remaining two items, none of the ratings (E or S, L, M, N, or NR) had been given by more than five of the twelve participants. These two items were 9 (4/12) and 13 (1/12).

Table XIV, General Evaluations of Methods of Evaluation, presents the frequency distribution of the responses of the participants to the two items of the general evaluations of methods of evaluation of industrial arts. These data indicate that one of the items, "a" (8/12), was rated as 5 (excellent), 4 (very good), or 3 (good) by 6/12 or more of the participants. On the remaining item "b" (4/12), none of the ratings (5 or 4 or 3, 2 or 1, M, N, or NR) had been given by more than five of the twelve participants.

Three of the participants provided comments on methods of evaluation. These comments can be summarized as follows:

1. One participant stated that safety inspection was left up



TABLE XIII

## DIRECTION OF LEARNING

## SUB-SECTION D. METHODS OF EVALUATION

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
10.	Data obtained from tests and other evaluative devices are used to help students know what they have done well and what needs to be improved.	6	5	11/12	0	0	0	1
1.	Evaluation is considered an integral part of the teaching-learning activities.	6	4	10/12	1	0	0	1
6.	Evaluation of student progress is based upon a variety of related criteria and suitable techniques of appraisal.	3	7	10/12	0	1	0	1
7.	Evaluation is related to differences in student aptitudes and abilities.	4	6	10/12	0	1	0	1
8.	Individual progress is recorded and becomes part of the cumulative record of the students for guidance purposes.	0	10	10/12	1	0	0	1
2.	A continuous program of evaluation is employed to determine the extent to which pupils achieve established goals or objectives.	4	3	7/12	4	0	0	1
3.	Student participation in the evaluation procedures is a part of a natural learning situation.	1	6	7/12	2	1	1	1



## TABLE XIII CONTINUED

## DIRECTION OF LEARNING

## SUB-SECTION D. METHODS OF EVALUATION

Item No.	Item Statement	Frequency Distribution of Item Ratings						
		E <sup>1</sup>	S <sup>2</sup>	R <sup>3</sup>	L <sup>4</sup>	M <sup>5</sup>	N <sup>6</sup>	NR <sup>7</sup>
4.	Industrial arts teachers carefully record objective data and anecdotal information.	2	5	7/12	3	1	0	1
5.	Periodic evaluations are made of current course content and methods.	2	5	7/12	3	1	0	1
11.	Comparisons are made between articles developed by students in the industrial arts program and commercial products.	3	3	6/12	4	1	0	1
9.	Student judgments of industrial arts experiences are secured near the end of courses and at specified times following graduation.	0	4	4/12	5	1	1	1
13.	Industrial arts equipment and facilities are inspected periodically by fire prevention and safety experts.	0	1	1/12	4	1	5	1
12.	Records are made of each student injury in the school shop and are compiled and analyzed regularly.	0	0	0/12	9	0	2	1

E<sup>1</sup> = provision is extensiveS<sup>2</sup> = provision is moderateR<sup>3</sup> = proportion of the total number of participants rating an item as E or SL<sup>4</sup> = provision is limited or missing but neededM<sup>5</sup> = provision is missing but its need is questionedN<sup>6</sup> = does not applyNR<sup>7</sup> = no response



TABLE XIV

## GENERAL EVALUATIONS OF METHODS OF EVALUATION

Item No.	Item Statement	Frequency Distribution of Item Ratings								
		5 <sup>1</sup>	4 <sup>2</sup>	3 <sup>3</sup>	R <sup>4</sup>	2 <sup>5</sup>	1 <sup>6</sup>	M <sup>7</sup>	N <sup>8</sup>	NR <sup>9</sup>
a.	How satisfactory are the evaluation procedures used in the industrial arts program?	0	2	6	8/12	3	0	0	0	1
b.	How satisfactory is the inspection of the school shop and its facilities?	1	1	2	4/12	5	2	0	0	1

5<sup>1</sup> = excellent4<sup>2</sup> = very good3<sup>3</sup> = goodR<sup>4</sup> = proportion of the total number of participants rating an item as 5, 4, or 32<sup>5</sup> = fair1<sup>6</sup> = poorM<sup>7</sup> = missing but its need is questioned.N<sup>8</sup> = does not applyNR<sup>9</sup> = no response





to the shop instructor.

2. One participant indicated that safety measures were inadequate.
3. One participant stressed the fact that "fire-causing tools" were not used.

### Outcomes of Industrial Arts

Table XV, Outcomes of Industrial Arts, presents the frequency distribution of the responses of the participants to the ten items of General Evaluations of the Outcomes of Industrial Arts. These data indicate that four of the items were rated as 5 (excellent), 4 (very good), or 3 (good) by 6/12 or more of the participants. These four items in rank order were "c" (7/12), "d" (6/12), or "e" (6/12), and "h" (6/12). Two of the ten items were rated as 2 (fair) or 1 (poor) by 6/12 or more of the participants. These two items listed with the proportion of participants rating the item as 2 or 1 were "b" (6/12) and "j" (6/12). On the remaining four items, none of the ratings (5 or 4 or 3, 2, or 1, M, N, or NR) had been given by more than five of the twelve participants. These four items in rank order were "a" (5/12), "f" (5/12), "g" (3/12), and "i" (3/12).

### Special Characteristics of Industrial Arts

Six of the twelve participants provided comments on the Special Characteristics of Industrial Arts. Comments indicating satisfaction with the industrial arts program were as follows:

1. Four participants stated that industrial arts provides boys with knowledge and skills useful as a foundation



TABLE XV  
OUTCOMES OF INDUSTRIAL ARTS

Item No.	Item Statements	Frequency Distribution of Item Ratings								
		5 <sup>1</sup>	4 <sup>2</sup>	3 <sup>3</sup>	R <sup>4</sup>	2 <sup>5</sup>	1 <sup>6</sup>	M <sup>7</sup>	N <sup>8</sup>	NR <sup>9</sup>
c.	To what extent are students developing a reasonable degree of skill in the use of basic tools and machines?	3	2	2	7/12	3	0	0	0	2
d.	To what extent do students develop an ability to organize and perform their work efficiently?	0	3	3	6/12	3	0	1	0	2
c.	To what extent are interests, aptitudes, and abilities in the industrial arts discovered and developed by students?	1	3	2	6/12	4	0	0	0	2
h.	To what extent are youth developing attitudes and practices relating to safety?	0	3	3	6/12	3	0	0	0	3
a.	To what extent do students possess a knowledge and understanding concerning the properties and uses of important raw materials?	0	1	4	5/12	4	0	0	0	3
f.	To what extent do students develop an appreciation of good design, construction and craftsmanship?	1	2	2	5/12	3	0	1	0	3
b.	To what extent do students possess a knowledge and understanding concerning basic industrial processes?	0	1	2	3/12	5	1	1	0	2



TABLE XV CONTINUED  
OUTCOMES OF INDUSTRIAL ARTS

Item No.	Item Statements	Frequency Distribution of Item Ratings								
		5 <sup>1</sup>	4 <sup>2</sup>	3 <sup>3</sup>	R <sup>4</sup>	2 <sup>5</sup>	1 <sup>6</sup>	M <sup>7</sup>	N <sup>8</sup>	NR <sup>9</sup>
g.	To what extent are youth developing an ability to select, care for, and use industrial products intelligently?	1	0	2	3/12	4	0	2	0	3
i.	How extensively do students develop constructive leisure-time activities or hobbies relating to industrial arts?	0	1	2	3/12	2	3	1	0	3
j.	To what extent do students possess information about various industrial occupations and industries?	0	0	1	1/12	3	3	1	1	3

5<sup>1</sup> = excellent

4<sup>2</sup> = very good

3<sup>3</sup> = good

R<sup>4</sup> = proportion of the total number of participants rating an item as 5, 4, or 3

2<sup>5</sup> = fair

1<sup>6</sup> = poor

M<sup>7</sup> = missing but its need is questioned

N<sup>8</sup> = does not apply

NR<sup>9</sup> = no response



for their development in citizenship and occupational competence.

2. Two participants indicated that industrial arts helps to develop the ability to use leisure time effectively. One of these participants indicated that it provides an outlet for pent-up energies and an opportunity to make useful articles for the home.
3. One participant stated that industrial arts develops habits of discipline, safety, and craftsmanship.
4. One participant indicated that industrial arts education helps students "to be economical".
5. One participant stated that industrial arts teaches students to utilize local materials.

Comments suggesting dissatisfaction with the industrial arts program were as follows:

1. Five participants indicated a need for more tools or power equipment.
2. Four participants stated that teachers should be better qualified to teach industrial arts.
3. Three participants stated the need for more materials.
4. Two participants stressed the need for a broader program of instruction to include such courses as plumbing, masonry, electricity, ceramics and carpentry.
5. Two participants indicated that "the electrification of all shops be effected immediately".
6. Two participants stressed that there should be a greater





consciousness of the value of industrial arts.

7. One participant indicated a need for more space for instruction, a change room, a drawing room, and stock storage.
8. One participant stated that more time should be allocated for industrial arts instruction.
9. One participant indicated a need for more literature and better first aid equipment.
10. One participant indicated that industrial arts should be more directly related to individual student abilities, than to arbitrary standards of achievement.
11. One participant stated that industrial arts should be made available to girls as well as boys.
12. One participant re-emphasized the need for more conferences among teachers.



## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### SUMMARY

This study reports the results of an evaluation of the industrial arts program in the primary schools of Grenada. The major objective of the study was to evaluate (1) the organization, (2) the nature of offerings, (3) the physical facilities, (4) the direction of learning, (5) the outcomes, and (6) the special characteristics of industrial arts in the primary schools of the state.

The scope of the investigation was state-wide involving the teachers in all industrial arts facilities functioning at the primary level in Grenada at the time of the research.

The instrument used for the collection of data for the study was a modified version of Section D-11 of the Evaluative Criteria, 1960 Edition published by the National Study of Secondary School Evaluation. The modifications in the use of the instrument included:

1. Visiting evaluation committees were not used; instead, the evaluation was based on the data provided by the teachers themselves.
2. Section VII, General Evaluation of Instruction in Industrial Arts, was deleted from the instrument.
3. Several of the instructions to participants were revised so as to make them more appropriate to the situation in Grenada.

Copies of the instrument were prepared and taken to the State



of Grenada by the researcher. After receiving permission to conduct the study from the Acting Chief Education Officer, the researcher met with each participant to explain the purpose of the research and solicit his participation. Within five weeks, eleven of the twelve copies of the instrument were returned. The twelfth copy was received by the researcher after his return to Canada.

The collected data were abstracted and the frequency distribution of the various ratings assigned by participants was recorded in tabular form. The items in each section of the research instrument were tabulated separately and arranged in rank order. The analysis of the tabulated data is presented in Chapter IV. The remainder of this chapter will present the conclusions and recommendations based on this analysis.

## CONCLUSIONS

The conclusions of the study were based on the number of items in each section of the instrument which were considered to be rated as Satisfactory, Unsatisfactory, or Inapplicable.

If a checklist item was rated as either "E" (extensive) or "S" (moderate) by 6/12 or more of the participants it was concluded that the participants considered provision for that item to be adequate, and the item was therefore considered to be rated as Satisfactory. Similarly, if a general evaluation item was rated as either 5 (excellent), 4 (very good), or 3 (good), by 6/12 or more of the participants it was concluded that the participants considered provision for that item to be adequate, and the item was therefore considered to



be rated as Unsatisfactory.

If a checklist or general evaluation item was rated as "N" (not desirable or does not apply) by six or more of the twelve participants it was concluded that the participants considered provision for that item to be unnecessary and the item was therefore considered to be rated as Inapplicable.

#### Organization of Industrial Arts

Nine of the 15 items in the Checklist dealing with the Organization of Industrial Arts were rated as Satisfactory. It was concluded, therefore, that the organization of industrial arts, as measured by the instrument was generally satisfactory to the participants. This conclusion is supported by the fact that two of the three items in the General Evaluations of the Organization of Industrial Arts were also rated as Satisfactory.

Although the organization of industrial arts appeared to be generally satisfactory, a major item of concern to the participants (as indicated by their responses to item "c" of the General Evaluations of the Organization of Industrial Arts) was financial support. Eleven of the twelve participants rated financial support for industrial arts as 2 (fair), or 1 (poor).

#### Nature of Offerings

Fourteen of the 17 items in the Checklist dealing with the Nature of Offerings of Industrial Arts were considered to be rated as satisfactory. It was concluded therefore, that the nature of offerings of industrial arts as measured by the instrument was





generally satisfactory to the participants. This conclusion is supported by the fact that two of the three items in the General Evaluations of the Nature of Offerings of industrial arts were also considered to be rated as Satisfactory.

#### Physical Facilities

Five of the 40 items in the Checklist dealing with the Physical Facilities of Industrial Arts were considered to be rated as Inapplicable. Of the remaining 35 items, 24 were considered to be rated as Unsatisfactory. It was concluded therefore that the physical facilities of industrial arts as measured by the instrument was generally Unsatisfactory to the participants. This conclusion is supported by the fact that three of the four items in the General Evaluation of the Physical Facilities of industrial arts were also considered to be rated as Unsatisfactory.

#### Direction of Learning: A. Instructional Staff

Ten of the 12 items in the Checklist dealing with Instructional Staff were rated as Satisfactory. It was concluded, therefore, that instructional staff of industrial arts as evaluated by the participants using the criteria of the instrument was generally satisfactory. This conclusion is supported by the fact that all four items in the General Evaluations of Instructional Staff were also rated as satisfactory.

#### Direction of Learning: B. Instructional Activities

Twelve of the 18 items in the Checklist dealing with Instructional Activities of industrial arts were rated as Satisfactory.



It was concluded therefore, that the instructional activities of industrial arts as measured by the instrument were generally satisfactory to the participants. This conclusion is supported by the fact that all three items in the General Evaluation of the Instructional Activities of industrial arts were also rated as satisfactory.

Direction of Learning: C. Instructional Materials

Three of the 10 items on the Checklist dealing with Instructional Materials of industrial arts were rated as Satisfactory. On two of the items the ratings were inconclusive. The remaining five of the ten items were rated as Unsatisfactory. It was concluded, therefore, that the instructional materials of industrial arts, as measured by the instrument, were generally unsatisfactory to the participants. This statement is not strongly supported by the ratings given to the three items in the General Evaluations of the Instructional Materials of Industrial Arts since one of these three items was rated as Unsatisfactory, one item was rated as Satisfactory, and the ratings on the remaining item were inconclusive.

Direction of Learning: D. Methods of Evaluation

Ten of the thirteen items in the Checklist dealing with the methods of evaluation of industrial arts were rated as Satisfactory. It was concluded, therefore, that the methods of evaluation as measured by the instrument, were generally satisfactory to the participants. This conclusion is supported by the fact that one of the two items in the General Evaluation of the Methods of Evaluation of industrial arts



was rated as Satisfactory while ratings on the remaining item were inconclusive.

#### Outcomes of Industrial Arts

Four of the ten items in the General Evaluations of the Outcomes of Industrial Arts were rated at Satisfactory. Two items were rated as Unsatisfactory and the ratings on the remaining items were inconclusive. It was not possible, therefore, to draw any conclusion concerning the outcomes of industrial arts as measured by the instrument.

#### Special Characteristics of Industrial Arts

Although six of the twelve participants provided comments on the special characteristics of industrial arts, no comment, either favorable or unfavorable, was made by 6/12 or more of the participants. It was not possible, therefore, to draw any conclusion concerning the Special Characteristics of Industrial Arts as measured by the instrument.

#### Comments:

Comments were made by a number of teachers on each of the six sections of the instrument. No individual comment, however, was made by more than 5/12 of the participants. It was not possible, therefore, to make specific conclusions based on the comments.

#### RESEARCHER'S OBSERVATIONS

The following observations were made by the researcher in conducting this investigation and are not supported by research data.



The reader will recall it was stated in Chapter I that it was not possible to establish self-evaluation committees as suggested in the guidelines for administering the research instrument. Because it was not possible to establish true self-evaluation committees in Grenada, there was no means of cross-checking the evaluations made by participants who were the only evaluators of the industrial arts programs in their schools. This procedure could be considered a limitation of this research. Because it was not possible to establish self-evaluation committees, the researcher, who is thoroughly familiar with the industrial arts program in Grenada (having taught in it for a number of years), has provided the following observations which reflect the researcher's views of the industrial arts program in Grenada.

#### Organization of Industrial Arts

One of the research findings of this study indicated that the participants were of the opinion that the organization of industrial arts in Grenada is generally satisfactory in their schools. In general, the researcher concurs with these findings. The reader should note that industrial arts is not available to girls, and that financial support for industrial arts is a matter of concern to the teachers.

#### Nature of Offerings

The data and comments provided by the participants revealed that the nature of offerings of industrial arts was generally satisfactory in their schools. In general, the researcher concurs with these findings. The reader should note that, because experiences in the industrial arts program were limited to woodwork and mechanical







drawing, the scope of the students' experiences in the program was also limited. The researcher observed that teachers were endeavoring to teach their students the basic skills and concepts associated with these two subject areas. Students were provided with the opportunity to plan and construct useful articles that could be used for the school, or for recreational purposes.

The teachers are also endeavoring to develop a general awareness of the educational, social, and economic benefits that can accrue from the industrial arts program. There were indications that teachers and students were interested in their work but there is a great need for more subject areas that would offer a greater variety of learning experiences to the students.

### Physical Facilities

The researcher endorses the conclusion drawn from the ratings by participants that the physical facilities (areas and equipment designated for industrial arts instruction) were generally unsatisfactory. It is obvious from the analysis of the ratings and comments of the participants that the deficiencies in the physical facilities were many and there was a pressing need to update the physical facilities. Although some of the item statements were rated as "N" (not applicable) by the participants, the reader should note that, according to the researcher's observations, proper maintenance of tools and equipment, ventilation, tool supply centres, chalkboards, variety of tools, instruments and equipment, storage space, filing space, library facilities, demonstration areas, finishing areas,



washing facilities, power safety articles, AVA equipment, and materials are important features of industrial arts programs in the educational systems of modern communities as well as developing countries.

#### Direction of Learning: Instructional Staff

The researcher concurs with the conclusion that the instructional staff was satisfactory. The reader must bear in mind that the teachers recognized the need for a well-defined philosophy of education and the need for better public relations with respect to the industrial arts program. It was the researcher's observation that teachers were making an effort to keep themselves informed on current happenings in their field so as to be better prepared for educational innovations for the improvement of the program, the individual, and the community.

#### Direction of Learning: Instructional Activities

In general the researcher endorses the participants' rating of instructional activities as satisfactory. The reader must bear in mind that the activities were chiefly related to woodwork and mechanical drawing. This limited the variety of experiences provided for the students. It was the researcher's observation that the learning activities needed to be related more closely with modern trends in industry and commerce.

#### Direction of Learning: Instructional Materials

The researcher concurs with the statement that instructional materials were generally unsatisfactory to the participants. According to the observations of the researcher, there was a general



deficiency of teaching aids and reference materials. It is likely that this deficiency hampers the students' work and experience and therefore is one of the causes for concern because effective learning and teaching depends upon materials and their effective use. In the researcher's opinion teachers can share in the responsibility of correcting this deficiency.

#### Direction of Learning: Methods of Evaluation

In general terms, the researcher concurs with the conclusion derived from the data provided by the participants, that methods of evaluation of industrial arts were generally satisfactory.

The researcher found evidence to support the statement that the teachers generally evaluated their students at various stages in the learning process, assessed students' projects upon completion, and tested their students at the end of the school term. The reader should note that the infrequent inspection of the safety features of equipment and facilities was due to the fact that the absence of electrical equipment and power tools reduced the safety hazards considerably. The absence of student injury records in the industrial arts facilities was noticed by the researcher. Student injuries, in the opinion of the researcher, should be recorded and analyzed regularly regardless of their extent and severity.

#### Outcomes of Industrial Arts

Although it was not possible to draw any conclusion concerning the outcomes of industrial arts, as revealed in the findings of this study, the researcher observed that the industrial arts program was





playing an important role in the education of students.

The students developed a reasonable degree of skill in the use of tools. They obtained knowledge about wood and wood products, materials related to the industrial uses of wood, and the basic industrial processes involved in the construction of many articles.

Industrial arts enabled the students to discern the relationship between various subject fields. Boys were seen applying mathematical principles in laying out their work in wood, and in mechanical drawing.

Some students discovered their interests and aptitudes in the building trades because they were exposed to related areas in industrial arts.

Although the participants were dissatisfied with the extent to which students in industrial arts developed constructive leisure time activities, it was the researcher's observation that many boys, upon leaving school and even while still attending school, constructed articles that not only provided enjoyable leisure time activity but also were of commercial value. It must be stressed again, that the need for additional subject areas limits the development of the students' awareness of occupational and industrial opportunities, products and processes. In general, however, the researcher is in accord with the ratings of the outcomes of industrial arts provided by the participants.

#### Special Characteristics of Industrial Arts

The researcher agrees with the views expressed by the six





participants who offered comments on the special characteristics of industrial arts. It is significant and important that these participants have either expressed or implied that industrial arts is serving a useful purpose in the education of boys in spite of the limitations of the program.

Many boys who have taken industrial arts courses have found employment in small industrial concerns after leaving school. These industrial concerns include the handicraft industry which produces articles for the expanding tourist trade, and the furniture construction industry.

Many deficiencies in the program were observed by the researcher, but these deficiencies can be reduced, and the program can be improved by the concerted effort of all concerned.

#### Participants' Comments

A number of teachers provided useful comments in the various sections of the instrument. Although no individual comment was made by more than 5/12 of the participants, and no specific conclusion, based on the comments, could be made, the researcher concurred with the comments made by the participants and noticed that the comments endorsed the ratings made by the participants. The comments, often addressed to the researcher himself, therefore provide additional credibility to the study.



## RECOMMENDATIONS

For the Education Department, Grenada

The following recommendations, based on the findings and conclusions of the study are suggested as possible courses of action for improving the industrial arts program in the primary schools of Grenada. These recommendations are presented in order of priority.

1. It is recommended that consideration be given to the improvement of physical facilities with specific attention to the following items:
  - a) Space for industrial arts facilities be increased to provide for: additional work and storage space, demonstration area, finishing room, and a lecture room which could also be used for a film showing and study area away from noise and dirt.
  - b) When additional space is planned, room layout and lighting be designed for more effective instruction.
  - c) Power equipment be provided when additional space is available.
  - d) Locker facilities and more adequate washing and drinking facilities be provided for both students and teachers.
  - e) Tackboard and display areas, and audio-visual aids, including films, filmstrips, slides, and projectors be provided.
  - f) Office and filing space be provided for teachers.



2. It is recommended that (in view of the large number of participants indicating a need for budgetary increases) consideration be given to the possibility of increasing financial support for the purchase of industrial arts supplies.
3. It is recommended that consideration be given to the possibility of providing teachers with more teaching aids, reference materials, and periodical literature.

#### For Further Research

From the findings of this study, the following areas of further research are suggested in order of priority:

1. It is recommended that other evaluative studies of the industrial arts program be carried out to examine the program in terms of the extent to which it meets the aspirations of the parents and community, and the needs of the students as measured by their success after graduation.
2. It is recommended that (in view of the number of teachers indicating a desire for further training) the feasibility of assisting teachers in obtaining further education be examined.
3. It is recommended that a study be carried out to examine the feasibility of admitting girls into the industrial arts program.



4. It is recommended that the adequacy of general safety precautions, practised in the schools where an industrial arts program of studies is offered, be examined.





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## APPENDICES





## APPENDIX A

### LETTERS



St. Stephen's College,  
Edmonton, Alberta,  
Canada.

Dr. Donald Manlove,  
Executive Secretary,  
National Study of School Evaluation,  
2201 Wilson Boulevard,  
Arlington, Virginia 22216, U.S.A.

Dear Mr. Manlove,

I am a student from the State of Grenada, West Indies, currently enrolled at the University of Alberta in a program leading to the Master of Education Degree which I am endeavoring to obtain in the coming fall 1971 session.

In fulfilment of one of the requirements for the degree, I must write a thesis, and for my research study I have decided to evaluate the Grenada Primary School Handicraft Program which is catering to pupils whose ages range from 11 to 16. It is evident that "Evaluative Criteria, 1960 Edition", published by the National Study of School Evaluation, are suitable instruments of evaluation in the school situation. My thesis supervisor, Dr. D. R. Young, who has recommended them has suggested that I obtain permission from the National Study of School Evaluation to use Section D-11 of the "Evaluative Criteria" in collecting data for my study.

I write, therefore to seek your kind assistance in securing the necessary permission to use the instrument, assuring you that should permission be forthcoming, this fact would be noted in an appropriate place in the reporting phase of my study.

With much appreciation for your assistance and cooperation in this matter.

Frank A. Aird.



2201 WILSON BOULEVARD  
ARLINGTON, VIRGINIA 22201  
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November 1, 1971

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National Association of Elementary School  
Principals  
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United States Office of Education

Mr. Frank A. Aird  
St. Stephen's College  
Edmonton, Alberta,  
Canada

Dear Mr. Aird:

The Evaluative Criteria 1960 Edition is now out of print and has been replaced by the Evaluative Criteria Fourth Edition. In addition, the National Study of School Evaluation has a Junior High / Middle School Evaluative Criteria published in 1970. You may wish to look at these instruments.

In specific answer to your request, I grant permission for you to use Section D-11 of the 1960 Edition in your dissertation. I would like to receive an abstract of your study when it is finished.

Donald C. Manlove  
Executive Secretary

DCM:lk1



## APPENDIX B

### QUESTIONNAIRE





## EVALUATIVE CRITERIA\*

## INDUSTRIAL ARTS

## GUIDING PRINCIPLES

The industrial arts curriculum consists of those courses, activities, or units of instruction designed to meet pupil needs which are outgrowths of the industrial aspects of modern democracy. Emphasis in instruction is placed upon social and personal needs related to the use of industrial goods and services in the home and community.

Industrial arts activities are, in general, exploratory in nature and continue to be exploratory until pupils require more specialized training in vocational, trade, and industrial education. When satisfactory vocational facilities are not available, the industrial arts department must assume some responsibility for this specialized training.

For all pupils, both boys and girls, the curriculum offers orientation to an industrial environment, occupational information, opportunity for development of consumer knowledge and skills related to industry and industrial products, and a variety of leisure and hobby pursuits to meet particular interests and needs so important in modern life.

NAME OF SCHOOL \_\_\_\_\_ DATE \_\_\_\_\_

Evaluation by \_\_\_\_\_ Office \_\_\_\_\_

DEPARTMENT \_\_\_\_\_

Ministry \_\_\_\_\_

\* Adapted from National Study of Secondary School Evaluation, 1960 Edition.



## INSTRUCTIONS

General

Members of school staffs making self-evaluations and members of visiting committees (officers of the Education Department) should understand that a regular part of the evaluation process consists in modifying the statements of guiding principles and of checklist and evaluation items. The purpose of the modifications is to make the statements consistent with the stated philosophy and objectives of the school and with the characteristics of the school and community. Unless it is obvious, the school should explain the reason for the change and its relation to the philosophy and objectives and to the needs of the students.

The two pivotal points of this evaluation are (1) the school's philosophy and objectives and (2) characteristics of the school and community. Persons making evaluations should ask: "How well do the practices in this school conform to the philosophy and objectives of the school?" and "How well do they meet the needs of the school and community?" When evaluations are made, factors such as size, type, location of school, financial support available, and state requirements should not be permitted to justify failure to provide a program and facilities appropriate to the philosophy and objectives and to the needs of the school and community. Also, the twofold nature of the work-evaluation and stimulation to improvement should be kept in mind. Careful, discriminating judgment is essential if these purposes are to be served satisfactorily.



## Checklists

The checklists consist of provisions, conditions, or characteristics found in a good industrial arts programme. Some may not be necessary, or even applicable, in every school. If any important features or procedures are omitted in the printed materials, they should be added in the appropriate places. The checklists should accurately and completely portray the programme, facilities, and practices of the school, thus providing the factual background for the evaluations.

The use of the checklists requires five letters:

E Provision or condition is made extensively.

S Provision or condition is made to a moderate extent.

L Provision or condition is very limited or missing but needed.

M Provision or condition is missing but its need is questioned.

This question might arise in relation to the philosophy and objectives of the school, the needs of the students, or because of differences of opinion of evaluators.

N Provision or condition is not desirable or does not apply.

When an item contains statements such as "Courses are required for all the students . . . " or "All teachers have the following qualifications . . ." the intention is to indicate the upper limit for those items. It is not implied that the provision must be present to the full extent stated in order to use the rating "E".

## Evaluations

Evaluations are the best judgements of the staff in the self-evaluation.



When one makes a judgment upon what is included in an evaluation item, using the ratings defined below, he should consider in the light of his whole experience, how well the school is fulfilling its objectives and the needs of the students.

5. Excellent: The provisions or conditions are extensive and are functioning excellently.
4. Very Good: (a) the provisions or conditions are extensive and are functioning well, or (b) the provisions or conditions are moderately extensive but are functioning excellently.
3. Good: the provisions or conditions are moderately extensive and are functioning well.
2. Fair: (a) the provisions or conditions are moderately extensive but are functioning poorly, or (b) the provisions or conditions are limited in extent but are functioning well.
1. Poor: The provisions or conditions are limited in extent and functioning poorly; or they are entirely missing but needed.
- M. Missing: the provisions or conditions are missing but their need is questioned. This question might arise in relation to the philosophy and objectives of the school, the needs of the students, or because of differences of opinion of evaluators.
- N. Does not apply: the provisions or conditions are missing but do not apply, or they are not desirable for the youth of this school or community, or they do not conform to





the school's philosophy and objectives.

### Comments

The school should enter in the proper spaces any notes or qualifications which will help to explain its responses or make more complete the description of its practices in the given area. If space allowed is insufficient, write in the margins or attach a sheet of paper.

## I. ORGANIZATION

### Checklist

- ( ) 1. The programme of industrial arts education is available to all students (boys and girls).
- ( ) 2. Emphasis is placed on a variety of beginning experiences in several industrial arts areas on the junior department level, with more intensive experiences on the senior department level.
- ( ) 3. A sequence of graded experiences is provided within each industrial arts course.
- ( ) 4. Specific industrial arts objectives or goals are identified with each course offering.
- ( ) 5. The industrial arts programme is organized so that it can make adjustments as new situations demand.
- ( ) 6. Industrial arts facilities are available to students, under proper supervision, outside of regular class time.
- ( ) 7. Separate industrial arts classes are provided for beginning and advanced students in the school.
- ( ) 8. Class periods for industrial arts are of sufficient length.



- ( ) 9. Consideration is given to such factors as type of activity, facilities available, and safety of students in determining class sizes.
- ( ) 10. Adequate funds are provided in the school's budget to support all elements of the industrial arts programme.
- ( ) 11. Programme development is a cooperative endeavor involving administrators, supervisors, teachers and lay people. The teachers and students work together in planning on the classroom level.
- ( ) 12. The industrial arts programme is coordinated with other courses.
- ( ) 13. The industrial arts staff co-operates with the public relation programme of the school.
- ( ) 14. Repair and production jobs are permitted in the industrial arts programme only as they fit into desirable educational experiences for students.
- ( ) 15. A daily nonteaching or conference period, free from regularly assigned duties, is provided each teacher carrying a full schedule of classes.
- ( ) 16.
- ( ) 17.



Evaluations

- ( ) a. To what extent are industrial arts courses available to all students?
- ( ) b. Are schedules, time allotments, and class sizes appropriate for industrial arts course offerings?
- ( ) c. How adequate is financial support for the industrial arts programme?

Comments

## II. NATURE OF OFFERINGS

Checklist

- ( ) 1. The industrial arts courses provide opportunities for youth to plan, construct, and evaluate in terms of their interest and aptitudes.
- ( ) 2. Experiences are provided in each industrial arts area, so that a degree of skill in the use of common tools and machines may be developed commensurate with the student's ability and scope of the programme.



- ( ) 3. A broad content is developed in each course in the industrial arts programme for a variety of industrial processes and materials adaptable to a school shop.
- ( ) 4. Meaningful learn-by-doing opportunities are planned with real materials, processes and products of industry. Content in industrial arts courses is related to the learners' world and is recognized as important by them.
- ( ) 5. The part industry has played in the development of modern societies is emphasized in each area of the programme.
- ( ) 6. Basic skills and concepts are used as tools in solving problems.
- ( ) 7. Specific efforts in the industrial arts programme are diverted toward the development in each individual of an attitude of pride and interest in doing useful things.
- ( ) 8. Specific efforts are directed toward the development of a working knowledge of the qualities and characteristics of materials which will meet the needs of an average citizen.
- ( ) 9. Emphasis is placed on the development of better understanding of such problems as appropriateness of materials to use, quality of workmanship, design, taste, and function.
- ( ) 10. Specific efforts are made to develop an awareness of the variety of activities performed in the environment that provide possibilities for leisure-time activities.
- ( ) 11. An overview of working conditions and labour-management problems is included at appropriate times in the instructional programme.
- ( ) 12. Emphasis is placed on developing an ability to select, care for, and use industrial products intelligently.





- ( ) 13. Students and teachers plan industrial arts experiences to develop better social adeptness.
- ( ) 14. Basic skills, such as reading, writing, arithmetic, speaking and listening are continually emphasized and made a part of the instructional programme.
- ( ) 15. Emphasis is placed on a continuous and co-ordinated department-wide programme of safety.
- ( ) 16. Activities in the industrial arts programme are organized to provide significant group activities and projects which revolve around problem-type situations.
- ( ) 17. Student-made projects are used in the teaching-learning process.
- ( ) 18.
- ( ) 19.

#### Evaluations

- ( ) a. To what extent are the information and experiences offered in the industrial arts programme related to modern industry?
- ( ) b. To what extent are scope and sequence of industrial arts courses related to interest, ability, and developmental needs of pupils?
- ( ) c. To what extent do the offerings provide for exploratory or tryout experiences with a variety of tools, materials, and industrial processes?

#### Comments



### III.. PHYSICAL FACILITIES

- ( ) 1. Industrial arts shops are appropriately located as a unit for students as well as for adult evening classes. Outside entrances are provided for the handling of supplies, equipment, and projects.
- ( ) 2. An average of 100 square feet of floor area is provided per student in industrial arts shops. (Machine and auto programmes may require additional space while drawing and electronics may require less.)
- ( ) 3. Room or school-shop proportions are within the range from a square to a rectangle of 1:1½ proportions; minimum width is 30 feet. All areas of the shop may be observed by the teacher from any position.
- ( ) 4. Natural light is effectively controlled to eliminate glare. Sufficient supplemental artificial light, properly diffused and distributed, is provided for a minimum of 30 foot-candles at bench height throughout the shops. Local lighting is provided in critical work areas.
- ( ) 5. Floors are in good condition and are suited to the area in



which they are located; precautions are taken against slippery floors with machine areas receiving special attention.

- ( ) 6. Facilities for ventilation commensurate with good working conditions are available.
- ( ) 7. Exhaust ventilation equipment is available in areas producing excessive heat, fumes, gases, and dust.
- ( ) 8. Where needed, adequate and properly located gas, water, electrical, and compressed air facilities are provided.
- ( ) 9. Each school-shop facility has a minimum of two entrance-exit doors with a width of 36 inches or more.
- ( ) 10. Ceiling height is appropriate, i. e., between 12 feet and 24 feet in all school shops and drawing rooms: and where applicable, ceilings are constructed of a material having a high co-efficient of sound absorption.
- ( ) 11. A ventilated fire-resistant cabinet is provided for the storage of combustible materials. A metal, self-closing container is provided for soiled rags. Each shop is equipped with appropriately located fire extinguishers of correct type and size.
- ( ) 12. Shop walls are durable and easily cleaned from the floor to top-of-door height. Sound-absorbing materials are used on upper-wall surfaces wherever the amount of noise suggests special wall treatment.
- ( ) 13. Washing facilities and drinking fountain of an appropriate size and location are provided.



- ( ) 14. Display case of a sufficient size, properly lighted, and appropriately located, is provided.
- ( ) 15. Convenient office or desk space is provided.
- ( ) 16. Filing space is located near the instructor's desk and is adequate for all necessary records, pamphlets, and illustrative materials.
- ( ) 17. School shop contains a convenient and centrally located tool and supply centre and, where applicable, an adequate number of well-laid-out tool panel areas for special tools.
- ( ) 18. Principles of "Colour dynamics," with moderation, are followed throughout each of the shops and on equipment to avoid glare.
- ( ) 19. Safe storage is provided for all supplies: storage area accommodates full-length stock and all appropriate materials.
- ( ) 20. Storage areas are provided for student projects under construction as well as for articles in the assembling and finishing stages.
- ( ) 21. Lockers are adequate in number and size and located so as to avoid crowding.
- ( ) 22. Equipment is arranged with reference to the sequence of operations and their relationship to other areas. Adequate clearances, commensurate with the function of the machine, are provided around all equipment.
- ( ) 23. The school shop has approximately one-third more work stations than the maximum class enrollment in order to provide needed flexibility. Ample aisle space is provided.





- ( ) 24. A finishing area with the following characteristics is provided in each shop where the facility is important: adequate in size, appropriately located, properly lighted and ventilated, easily supervised, and relatively free of dust.
- ( ) 25. A demonstration and discussion area, with space for each student, is provided in all shops.
- ( ) 26. Convenient shop, library, and planning facilities are located away from major machine noises and dirty areas of the shop. Adequate space is provided for the storage of books, magazines, and folders.
- ( ) 27. Appropriate and convenient film-showing facilities are provided.
- ( ) 28. Selection of tool and machines is based on their instructional value.
- ( ) 29. There is a quantity and variety of tools, instruments and equipment to meet the needs of the industrial arts programme.
- ( ) 30. Unit-type machines with self-contained motors are used throughout the industrial arts programme; equipment is adapted to the size and maturity of the students, i. e., height from the floor to the working surface of a machine, size of a machine, horsepower, speed, and capacity.
- ( ) 31. All power machines and manually operated equipment are provided with effective guards which are used by the operators at all times.



- ( ) 32. Conveniently located and appropriately painted switches or control boxes are provided on all power machines. These are easily accessible from the position of the operator.
- ( ) 33. A master electrical panel is conveniently and centrally located in each shop. All machines, wired in with building, are provided with disconnect switches and have controls providing undervoltage and overload protection. All machines are grounded.
- ( ) 34. All tools and equipment used in school shops receive proper maintenance.
- ( ) 35. Appropriately marked safety zones are identified around machines and in areas where there are potential hazards.
- ( ) 36. Safety clothing and protective devices are provided.
- ( ) 37. One or more well-located, permanent chalkboards, ample in size and in good condition, are provided in each school shop or drawing room.
- ( ) 38. One or more well-located tackboards, ample in size and in good condition, are provided in each school shop.
- ( ) 39. Motion picture, filmstrip, slide, and opaque projectors are available within the school when needed.
- ( ) 40. Industrial arts shops are clean and neat; good planning and organization are in evidence.
- ( ) 41.
- ( ) 42.



Evaluations

- ( ) a. How satisfactory are the space and layout of industrial arts shops?
- ( ) b. How adequate are the machinery and equipment?
- ( ) c. How satisfactory are health and safety measures?
- ( ) d. How adequate are provisions for storage?

Comments

## IV. DIRECTION OF LEARNING

## A. INSTRUCTIONAL STAFF

Checklist

- ( ) 1. A well-defined philosophy of education is held by the industrial arts teachers.
- ( ) 2. Industrial arts staff members are properly qualified and certified.
- ( ) 3. Industrial arts teachers possess competence in a variety of teaching methods.



- ( ) 4. Industrial arts staff members recognize the importance of activities in the instructional programme.
- ( ) 5. Staff members invite parent and community reactions to the industrial arts programme.
- ( ) 6. Industrial arts teachers strive to keep abreast of professional literature and research in the field of education.
- ( ) 7. Industrial arts teachers discuss their curriculum and sponsor activities which help their colleagues to a better understanding of the industrial arts programme.
- ( ) 8. Industrial arts teachers are aware of teaching problems in other areas and work for the improvement of the whole school programme.
- ( ) 9. Industrial arts teachers understand counselling procedures and guidance services and help students with educational and vocational choices.
- ( ) 10. Teachers are qualified in first aid and safety procedures.
- ( ) 11. Industrial arts teachers maintain active participation in in-service education through formal study and other professional activity.
- ( ) 12. Industrial arts teachers maintain an active interest in professional advancement, including participation in educational organizations.
- ( ) 13.
- ( ) 14.





Evaluations

- ( ) a. To what extent do the staff members possess a well-defined point of view toward industrial arts education?
- ( ) b. To what extent do staff members possess satisfactory qualifications?
- ( ) c. To what extent have the industrial arts staff members informed themselves about current educational literature and research?
- ( ) d. To what extent do industrial arts staff members discuss educational problems with fellow teachers, their administrators, and with the lay public?

Comments

## B. INSTRUCTIONAL ACTIVITIES

Checklist

- ( ) 1. Learning activities in the industrial arts programme related directly to the attainment of desired student behavior changes



are identified with special industrial arts objectives.

- ( ) 2. Lesson planning, ranging from an overview of the year's programme to daily instructional activities is in evidence in each industrial arts shop or drawing room.
- ( ) 3. In developing each phase of the industrial arts programme teachers recognize student ability levels.
- ( ) 4. Specific efforts are directed toward the attainment of appropriate social relationships and good work habits and attitudes.
- ( ) 5. Students working in groups exchange ideas in the solution of problems.
- ( ) 6. Industrial arts education attempts to familiarize youth with the more meaningful aspects of modern industry.
- ( ) 7. Industrial arts activities provide an opportunity for boys and girls to become familiar with, and to use many of, the basic tools and machines of industry.
- ( ) 8. Students learn how a variety of commercial products are made.
- ( ) 9. Students learn the sources of materials.
- ( ) 10. Students study the characteristics and limitations of industrial materials.
- ( ) 11. Students develop appropriate drawings or plans and follow a systematic order of procedure in relation to a problem or project.
- ( ) 12. Community resources are used as aids to instruction.
- ( ) 13. Numerous activities are planned in the industrial arts programme to help students develop qualities of leadership.



- ( ) 14. Students draw on many out-of-school sources of information in fulfilling assignments.
- ( ) 15. Provisions are made for students to participate in related extracurricular activities.
- ( ) 16. Audio-visual materials are used in the instructional programme.
- ( ) 17. Students take an active part in the safety programme by serving as student safety supervisors, solving thought-inducing safety problems, and taking safety tests.
- ( ) 18. Staff members employ a wide variety of suitable materials and techniques of instruction.
- ( ) 19.
- ( ) 20.

#### Evaluations

- ( ) a. How effectively do instructional activities relate to student needs and programme goals?
- ( ) b. How adequate is the planning and preparation for instructional activities?
- ( ) c. How effective is the teaching?

#### Comments



## C. INSTRUCTIONAL MATERIALS

Checklist

- ( ) 1. A variety of teaching guides is available.
- ( ) 2. Up-to-date textbooks are available.
- ( ) 3. A variety of carefully selected references is available.
- ( ) 4. Reference materials are appropriate and are within the understanding of the students.
- ( ) 5. Periodicals, pamphlets, and materials suitable for student use and related to the instructional activities are available in each area of the industrial arts programme.
- ( ) 6. Descriptive material and commercial products are available for instruction.
- ( ) 7. Occupational monographs are available.
- ( ) 8. Posters, charts, graphs, and pictures are available.
- ( ) 9. Teaching aids consisting of miniature, cutaway, and actual-size projects and devices are provided.
- ( ) 10. Films, filmstrips, and slides are provided in all industrial arts areas.
- ( ) 11.
- ( ) 12.

Evaluations

- ( ) a. To what extent are teaching guides used in the instructional programme?
- ( ) b. Are texts and reference materials appropriate and of good quality?





- ( ) c. How adequate is the variety of instructional materials?

Comments

#### D. METHODS OF EVALUATION

Checklist

- ( ) 1. Evaluation is considered an integral part of the teaching-learning activities.
- ( ) 2. A continuous programme of evaluation is employed to determine the extent to which pupils achieve established goals or objectives.
- ( ) 3. Student participation in the evaluation procedures is a part of a natural learning situation.
- ( ) 4. Industrial arts teachers carefully record objective data and anecdotal information.
- ( ) 5. Periodic evaluations are made of current course content and methods.



- ( ) 6. Evaluation of student progress is based upon a variety of related criteria and suitable techniques of appraisal.
- ( ) 7. Evaluation is related to differences in student aptitudes and abilities.
- ( ) 8. Individual progress is recorded and becomes a part of the cumulative record of the students for guidance purposes.
- ( ) 9. Student judgments of industrial arts experiences are secured near the end of courses and at specified times following graduation.
- ( ) 10. Data obtained from tests and other evaluative devices are used to help students know what they have done well and what needs to be improved.
- ( ) 11. Comparisons are made between articles developed by students in the industrial arts programme and commercial products.
- ( ) 12. Records are made of each student injury in the school shop and are compiled and analyzed regularly.
- ( ) 13. Industrial arts equipment and facilities are inspected periodically by fire prevention and safety experts.
- ( ) 14.
- ( ) 15.

#### Evaluations

- ( ) a. How satisfactory are the evaluation procedures used in the industrial arts programme?
- ( ) b. How satisfactory is the inspection of the school shop and its facilities?



Comments

## V. OUTCOMES

Evaluations

- ( ) a. To what extent do students possess a knowledge and understanding concerning the properties and uses of important raw materials?
- ( ) b. To what extent do students possess a knowledge and understanding concerning basic industrial processes?
- ( ) c. To what extent are students developing a reasonable degree of skill in the use of basic tools and machines?
- ( ) d. To what extent do students develop an ability to organize and perform their work efficiently?
- ( ) e. To what extent are interests, aptitudes, and abilities in the industrial arts discovered and developed by students?
- ( ) f. To what extent do students develop an appreciation of good design, construction, and craftsmanship?



- ( ) g. To what extent are youth developing an ability to select, care for, and use industrial products intelligently?
- ( ) h. To what extent are students developing attitudes and practices relating to safety?
- ( ) i. How extensively do students develop constructive leisure-time activities or hobbies relating to the industrial arts?
- ( ) j. To what extent do students possess information about various industrial occupations and industries?

## VI. SPECIAL CHARACTERISTICS OF INDUSTRIAL ARTS

1. In what respect is the industrial arts programme satisfactory and commendable?
  - a.
  - b.
  - c.
  - d.
2. In what respects is there greatest need for improving industrial arts?
  - a.
  - b.
  - c.
  - d.





APPENDIX C

INDIVIDUALS INVOLVED IN  
DATA ABSTRACTION



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